Report of

The Maryland Agricultural Society—

Maryland Farm Bureau Federation,

INCLUDING REPORTS OF THE

Maryland State Horticultural Society,

Maryland Crop Improvement Association,

Maryland State Dairymen's Association,

Maryland State Beekeepers' Association,

Maryland Vegetable Growers' Association,

Maryland Sheep Growers' Association,

Maryland Tobacco Growers' Association,

Maryland Swine Growers' Association,

Home and Community Committee Meeting,

Beef Cattle Conference,

4-H Club Conference.

REPORT OF THE

MARYLAND AGRICULTURAL SOCIETY

THE

MARYLAND FARM BUREAU FEDERATION

INCLUDING THE REPORTS OF

THE MARYLAND STATE HORTICULTURAL SOCIETY
THE MARYLAND CROP IMPROVEMENT ASSOCIATION
THE MARYLAND STATE DAIRYMEN'S ASSOCIATION
THE MARYLAND STATE BEEKEEPERS' ASSOCIATION
THE MARYLAND VEGETABLE GROWERS' ASSOCIATION
THE MARYLAND SHEEP GROWERS' ASSOCIATION
THE MARYLAND TOBACCO GROWERS' ASSOCIATION
THE MARYLAND SWINE GROWERS' ASSOCIATION
HOME AND COMMUNITY COMMITTEE MEETING
BEEF CATTLE CONFERENCE
4-H CLUB CONFERENCE

VOLUME XIII, FOR THE YEAR 1928

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PUBLISHED BY THE SOCIETY, MAY 1, 1929.
EDITED BY M. M. STEWART AND T. B. SYMONS,
BALTIMORE, MD.

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LETTER OF TRANSMITTAL

To His Excellency, Albert C. Ritchie,
Governor of Maryland.

SIR:

I herewith submit to you as directed by the Act incorporating the Maryland Agricultural Society, and also the Horticultural Society, this report for the year 1928, which contains a detailed statement of the receipts and expenditures of the Society as approved by the Executive Committee and Advisory Council. It contains the proceedings of the thirteenth annual meeting of the Maryland Agricultural Society, Maryland Farm Bureau Federation, and annual meetings of the Affiliated Associations.

I trust that an inspection of its contents will convince you that the funds appropriated for this purpose have been wisely and judiciously expended.

Respectfully submitted,

M. M. STEWART,
Secretary.

May 1, 1929,
Baltimore, Md.

THE MARYLAND AGRICULTURAL SOCIETY

THE MARYLAND FARM BUREAU FEDERATION

Sherwood Building

Baltimore, Md.

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1929

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R. Smith Snader.....New Windsor
John E. Patten.....East New Market
M. Frank Holter.....Middletown
Walter S. Spencer.....Jarrettsville
J. Wilson Lord.....Ellicott City
Charles I. Boyle.....Queen Anne
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B. I. Sparks, Vegetable Growers' Association.....Baltimore
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A. G. Ensor, Agricultural Corporation of Maryland.....Forest Hill
I. W. Heaps, Maryland Dairymen's Association.....Baltimore

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Dr. T. B. Symons, Director, Ertension Service, College Park, Md.
Dr. H. J. Patterson, Director, Experiment Station, College Park, Md.
Mr. A. G. Ensor, Master, State Grange, Forest Hill, Md.

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1929

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1929

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Crop Improvement Association

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Assistant Secretary, F. W. Oldenburg.....College Park

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Beekeepers' Association

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Vegetable Growers' Association

President, G. R. Cobb.....Salisbury
Vice-President, B. I. Sparks.....Baltimore
Secretary-Treasurer, W. R. Ballard.....College Park

Tobacco Growers' Association

President, Thomas Parran.....St. Leonards
Executive Vice-President, George I. Gardiner,
State Tobacco Warehouse, Baltimore
Secretary, George Sachse.....Baltimore
Manager, J. P. Brown.....Baltimore

Stockmen's Association

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Vice-President, H. D. Wolfe.....Glenwood
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Assistant Secretary, K. A. Clark.....College Park

Agricultural Corporation of Maryland

President, James W. Davis.....Rocks
Vice-President, A. G. Ensor.....Forest Hill
Secretary-Treasurer, John A. Englar.....Baltimore

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REPORT

of

THIRTEENTH ANNUAL MEETING

of the

Maryland Agricultural Society

the

Maryland Farm Bureau Federation

BALTIMORE, MARYLAND

WEDNESDAY AFTERNOON

January 9, 1929

The First Session of the Thirteenth Annual Meeting of the Maryland Farm Bureau Federation, held in the ballroom of the Hotel Rennert, Baltimore, Maryland, convened at two-five o'clock, Mr. James W. Davis, President, presiding.

PRESIDENT JAMES W. DAVIS: The meeting will please come to order. I will introduce to you the Presiding Officer for this afternoon, who really needs no introduction, but at the same time that introduction is customary, E. Thomas Massey, our Vice President.

CHAIRMAN E. THOMAS MASSEY: I will try to preside at the meeting this afternoon and hold these speakers down. This little routine of the State President introducing me is just to get me to introduce him, so it now gives me great pleasure to introduce to you your State President, James W. Davis, who will make his Annual Address. (Applause).

PRESIDENT'S ANNUAL ADDRESS

BY J. W. DAVIS, ROCKS, MD.

Farm Bureau Members, Ladies and Gentlemen:

It gives me a great deal of pleasure to greet you all again at the beginning of another year. Our Secretary told me the other day that he limited me to fifteen minutes. I told

him I didn't care if he made it ten, because I could tell about all I knew in ten minutes. Anyway, I will try and do what I can at this job, which is not one of my strong points by any means.

The first thing I noticed the other day in picking up a paper was, that I was expected to say something about the national meeting at Chicago. We had a delegation go to the meeting in Chicago this year of which I was certainly proud. We had I think about 13 or 14 Farm Bureau members go in one car. They thought so much of us that they gave us a sleeping car and told us that car belonged to us. We behaved pretty well and we had quite a bit of fun as you know boys will, even if their heads are a little gray. We had among our party persons to give it plenty of standing and show, so that there really was some class to us—first, I might mention Mr. Charles T. Cockey, Jr., of Baltimore County. Somebody in Chicago told me he was just the ideal, typical Maryland gentleman. I don't want Mr. Cockey to feel too proud of himself, but we were certainly proud of him. Then we had Mr. Heaps and Senator Snader, of the Dairymen's Association; Mr. Massey and Mr. Smyth, of Kent County; Mr. Lord, of Howard County—we had so many that I can't name them all, anyway we had a big time.

We also had a county agent with us who had never spent a night on a sleeping car before, and we felt that there was some little initiation coming to him. He had an upper berth. Some of the boys got very close to the porter in some way or other, and along about midnight I heard a big racket. I looked out, and they were just about to close this boy up in his berth. He stuck his head out and certainly raised a row.

But taking it all in all we had a mighty good time. When we got to Chicago our party divided up. Some of us went down to Peoria, some went to the stock show at Chicago, and then on Friday and Saturday we spent most of our time in training-school work. After that some went back to the live-stock show to see more of it. It was mighty good show and well worth seeing. So taking it all in all we had a mighty pleasant trip.

But we had some trouble, too. When we got out there we found a lot of people had the flu and a great many people were coughing and sneezing, and finally that flu got our Secretary. It had the rest of them scared most to death, in fact they were scared so badly that most of the delegation left Chicago one day earlier than was scheduled, and I think they were all glad to get back to Maryland.

As far as the annual meeting was concerned, we spent Friday and Saturday in Board meetings, and then on Monday the annual meeting commenced in earnest. We had a big room, and first we had the President's address. He told us among other things that the condition of the farmer today wasn't any better, in fact, no better than a year, two three or five years ago. He said among other things, and he had facts and figures there to prove it, that the farmer has been accused of being inefficient and a poor producer, that it cost him too much to produce what he did produce; but he had figures there to show that the farmer had increased his production in the last twenty years to a greater percentage than industry had increased its production. Now, we hear quite a lot about the increased production of industry, but he gave us figures to prove that where industry had increased their production 40 per cent, the farmers of this country had increased their production 47 per cent in the same time.

The trouble is, however, the farmer doesn't get a return for his production. He increases his production and that only makes his situation worse, because the market will only take about so much corn, wheat or pork and things of that kind that we have to sell, and the more you produce, it seems the worse the prices get. President Thompson went on to show among other things that the farmer's income is very much reduced from what it was seven or eight years ago, but his taxes have gone up two or three times; in fact, in the last year the farmers of this country paid out about one-half of their net income for taxes.

Now, we all say, that the farmer likes to have good roads and good schools—we all say we'd like to have those things. I believe we should, and I think for the farmer to say that

we shouldn't have them would be unpopular and may be taking the wrong stand. But there is another side to that story. If the farmer is going to have all these things, somebody has got to pay the bill. When it comes to rural schools I believe that the farmer can't very well expect the city man to educate his children. I believe as far as that is concerned to a great extent the farmer has got to pay for his own schools, and he has got to keep them up. When it comes to a matter of roads, I am inclined to think it is a little different proposition. I believe that statistics and investigations have shown that the city people use the roads more than the country people, and for that reason the city people should help build those roads just as well as the country people. In fact, if a city man wants to use a road I don't know where he'd go to use it unless he went out in the country somewhere, and it looks to me very reasonable that the city man should help build those country roads, because they use them just as much as the country people do, and they are all for the benefit of the State.

I think among other things I should mention is the banquet. We are proud of our banquets here, and we certainly do have some very enjoyable times. The same thing happened at the meeting in Chicago only on a great deal larger scale. Our banquet at Chicago celebrated the tenth annual meeting of the American Farm Bureau. The Farm Bureau was organized at Cornell University in New York State ten years ago, and it has made a wonderful advance. The banquet was sort of in celebration of that tenth anniversary. Each table had ten candles on it. Also on each table was a little cake that was supposed to be a birthday cake, and there were ten lighted candles on that cake. At the President's table there was a tremendously big cake. I don't know who ate it all, but it would have been a pretty big job even for a little boy, I think. It was a very enjoyable occasion, and I think everybody was well pleased with it.

Now, I don't know that it is necessary to say very much more about the annual meeting. Our resolutions came in on Wednesday, and then the election of the Board of Directors. Our National Board of Directors is composed of four-

teen members besides the President and Vice President, and there are three or four new members elected each year, and four new members came in on the Board this year. After the annual meeting adjourned we spent another day in a board meeting, so that when we finished up it was Thursday. But most of our fellows went home on Wednesday on account of the flu. They didn't tell me that, but I think they didn't want to stay there any longer on that account.

Our Secretary went to bed about the first of the week with the flu and he had the bad luck to have to stay in bed most of the time; in fact, he ought to have been in bed Sunday night. Sunday night we had a banquet given by the Board of Directors and the President to the State Presidents and Secretaries, and I noticed some of the fellows from the different States came in with two or three secretaries, some mighty good looking lady secretaries, I turned to Mr. Stewart, who was sitting pretty close to me, and told him that I wished to goodness he'd hand in his resignation so I'd get a chance to get a Secretary like that! But instead of that he went to bed, and we didn't see much of him all week only when I'd go in to look him over and then I didn't stay very long because I didn't want to get the flu.

Anyway, we got everything finished up and Mr. Stewart and I started home on Saturday afternoon and got in here some time Sunday morning, and he has been getting a little better. The flu still makes a grab for him once in a while, but I think he will make a good recovery, as our old family doctor used to say. I thought I was getting along fine. I boasted a little bit about the fact that the flu hadn't got me, but last week it came along and made a grab for me and about got me for three or four days, but I am glad to say I think I have made a pretty fair recovery. Anyway, I am here, just as much of me as you can see, and I am going to do the best I can with this job.

Now I think I have talked long enough. I don't know if my time has run out or not. I think my fifteen minutes has really gone now, but there are a few more things I think I ought to mention. One thing is that we had demonstrated, and I don't think it takes much demonstration to tell all

the farmers that things are not just right. One way we can help to make things right is by making our organization better; not only that, but working with every other organization. I think some times in these organizations there has been just a little too much of a feeling that we have got the only organization that there is. That is not just the case. There are lots of other good organizations, and as I told our Board members at Chicago, if we want to get legislation that will help us it was necessary in my opinion to sit down around the table with other strong organizations and work out a plan that we can all agree on, and then go before Congress and ask for assistance, and all of us ask for the same thing. I said if we didn't, I did not believe we ever will get very far.

I think that is the situation right here. I think in Maryland if organizations will all work together and every one of them tries to do what they can to help the other fellow and help themselves, we can make things a little better than they are now. I don't want any of you to think that I believe that legislation is going to do a whole lot directly for the eastern farmer. I don't believe this farm relief proposition is going to do a whole lot for the eastern farmer; only that the fellow back in the western part of the country has been accustomed to growing grain, hay, produce, live stock, and things like that, and he wants to keep on doing it. We have some pretty nice markets here owing to just some of our organizations such as the Dairymen's Association and the Tobacco Growers. We have got some mighty good markets, but some of those fellows from Iowa said to me some time ago, "If we could have our crops and your markets we'd be sitting on top of the world," and I'll tell you those boys are looking to our eastern markets. We might say that we are going to hold these eastern markets, but I doubt very much whether we will hold the markets very long if we don't help to do something to help those other fellows, because they are coming in here and putting a pressure on our eastern markets that I doubt very much whether they will be able to stand. So after all, we need

organization, and we need to go about this thing earnestly and wholeheartedly.

As far as our State affairs are concerned, I think that I should express our appreciation of the attitude of our Governor and our State administration. They have always shown a willingness to help us and do anything reasonable, and I think on the other hand that we should be reasonable when we go to ask for help. I don't think we should take the attitude that we are the whole show, but we should go to the Legislature with a request for things that are right and things we ought to have, and I feel pretty sure we will get it.

There is another thing that should be mentioned at this time, and that is the Extension Service. The Extension Service has certainly been one of the biggest helps the farmers of this State ever had, and I believe we have the best Extension Service of any State that I know of. I know that our co-workers down there are always ready and willing, and they go out of the way many times to help us farmers out of our trouble, and I think some times more than we realize, more than we appreciate, I just want to bring that to your attention at this time, because it is a fact. It has been the case for years and years, and we can't express our appreciation too strongly.

There is another thing that has been a very happy situation in this State even before the Farm Bureau came in. We have an organization here that has done a wonderful work, and that is our Grange. In fact, I believe if we shook Farm Bureau members and Grangers together you'd find they are pretty much the same thing. I know when I go to a Grange meeting I see a lot of Farm Bureau members, and if I go to a Farm Bureau meeting I see mostly Grangers, so I think they are about the same people. But the closer we work together on all these things, the more we are going to help each other, and the more we are going to get out of it.

We have our Tobacco Growers' Association which some of us in the upper part of the state don't know so much about, but they have done a wonderful work; in fact, the census going back two or three years ago showed that the five southern counties, the tobacco growing counties, were

the only counties in the State that hadn't been deflated since the war. Maybe some of those men down there could tell us how they did it. We holler a lot about hard times, and I still wonder whether we have really ever been deflated.

The income from the northern counties was cut in half three or four years ago, but the census report showed those southern Maryland farmers how much money they got during the war.

Now, I might go a little farther and say that any measure of success our organization has been able to achieve has been due to the co-operation and hard work of our officers, our Vice President, our Secretary, and our Board of Directors. We have met here many times, and I know it has been a sacrifice to those men, and I know they haven't done it for what money they get out of it, because we don't get much. Maybe some times we get a lunch out of it, and that is about all. Anything that has been done has not been done by me, I am sure; it has been done by these other fellows, and if we have been of any real help to the farmers of this State, they are the ones to whom the credit belongs. I think I have overrun my time, and I am going to thank you all and sit down. (Applause).

CHAIRMAN MASSEY: We will have the report of our State Secretary-Treasurer, Mr. M. M. Stewart. (Applause).

ANNUAL REPORT OF SECRETARY-TREASURER

M. MELVIN STEWART

For year 1928.

Mr. President, Fellow Farm Bureau Members, Ladies and Gentlemen:

The year 1928 is gone and what we as a State Farm Bureau have accomplished is now a matter of record. I feel that some very constructive work is to our credit. More, no doubt, could be accomplished, but it must be remembered that the full time paid personnel of your State Farm Bureau Federation consists only of myself, as your State Secretary-Treasurer and my Secretary Miss Ida K. Fairbank. Mr.

James M. Hoblitzell, the editor of the Maryland section of the Bureau Farmer, is employed only part-time for this work.

Our President Mr. James W. Davis, now completing three years as head of this organization has given every assistance in his power and whenever possible, made every call for him to attend any meeting, conference, etc., within or without the State.

For the information of those who do not know it, to my actual knowledge as your Treasurer, he has never requested nor accepted a single penny from the Farm Bureau as compensation for time or expense.

Our finances have been limited and we have had to watch carefully our expenditures. For this same reason, we have had to limit our activities.

We have closed the year 1928 with a better balance than in any of the past three years. We got out of debt in 1927 and have since consistently fought shy of debt.

Our financial statement of receipts and disbursements for the year 1928 is as follows:

Statement for Period from January 1, 1928, to December 31, 1929

Receipts:

County dues collected	$6,693 00
Subscriptions to Bureau Farmer collected	1,111.50
A. F. B. F. dues	1,111.50
Associated membership dues collected	160.00
Received from annual meeting banquet 1927	818.00
Interest earned	36.11
Furniture and fixtures sold	214.00
Bonding expense refund	47.71
Office expense refund	60.94
Telephone refund	15.31
Publicity advertising	906.73
Automobile insurance commissions	2,800.27
Total income from period	$13,975.07
Bank balance January 1, 1928	218.18
Available cash	$14,193.25

Disbursements:

Executive Committee expense	$126.68	
Furniture and fixtures purchased	497.87	
Organization expense, Farm Bureau	634.53	
Organization expense, wool marketing	154.97	
Organization expense, Farm Bureau membership	14.93	
Bonding expense	72.98	
Annual meeting expense 1928	755.10	
Annual meeting expense 1929	120.00	
Salary—Secretary-Treasurer	3,600.00	
Salary—Clerk	1,560.00	
Salary—Publicity	360.00	
Salary—Accountant	180.00	
Office expense	782.80	
Telephone, telegraph and rent	910.25	
Board of Directors' expense	213.25	
Traveling expense	605.68	
Publicity expense	1,280.63	
Dues A. F. B. F.	1,086.50	
Total disbursements for period		12,956.17
Bank balance December 31, 1928		$1,237.08

Now, may I draw your attention to some of our various activities during the past year.

Automobile Insurance

Last year I reported we had entered into a contract with the Farm Bureau Mutual Automobile Insurance Company whereby our members and Maryland farmers would be offered the protection of this type of insurance at a saving of 40-50% of regular stock company rates.

Early in the year 1928 the company was licensed to do business in Maryland and a State agency opened at the State Farm Bureau headquarters. An agency force has been selected and approximately 2,500 farmers have insured their cars. I will not go into further details, as the next speaker our State Agent, will tell you of the work.

However, to give you an idea of how this service is considered and valued by our farmers, I had one of our leading farmers say to me one day when I met him on the street in Baltimore, "Mr. Stewart, if the Farm Bureau had never done another thing, this Automobile Insurance Service is worth all the Farm Bureau has cost our farmers."

Wool Marketing

Another outstanding service for our farmers—namely the Farm Bureau Wool Pool—was operated in 1928. Profiting from our experience of 1926 and 1927 the Maryland Farm Bureau Wool Pool, Inc., operated what we choose to call a "weekly assemblying and bag inspection pool" with a guaranteed price for clear wool named every Saturday, covering all deliveries at the Baltimore warehouse during the next week.

This plan met with general approval over the State as evidenced by many letters received from our 1928 patrons.

When the Pool named its first price of 45c per pound for clear wool (netting 44½c per pound to Farm Bureau members and 44c to non-Farm Bureau members) county buyers were offering and paying 40c net to producers.

Immediately upon the naming of our price these buyers jumped to meet our price and so it went from week to week,—as we raised our price the county price raised. We

finally reached 52c, and paid this price for quite a number of weeks. County prices kept advancing until they were paying generally from 50c to 51c per pound.

Thus, the Pool had the effect of raising the price level all over the State for all wool growers. The Pool made a 500% increase over its 1927 receipts and it is our hope that 1929 can show a similarly healthy increase.

Co-operative Purchasing

Again I wish to report that our Co-operative Purchasing activities have progressed upon a steady, even keel, showing an increase in patronage because of satisfaction with quality, price and service. Our worthy President, Mr. James W. Davis, is also President of the Agricultural Corporation of Maryland and has directed this phase of the work. The Corporation, though working on a very small commission and a limited personnel, is in good financial condition and has just recently sent dividend checks to all stockholders. It is gratifying to know that since that day (February 15th, 1923) when the Board of Directors passed a resolution pledging the support of the Farm Bureau to the Corporation, the capital of the Corporation (then greatly impaired) has been brought back to par and each stockholder has received the equivalent of a 6% dividend for each year—six years in all—since that time.

Tomato Tariff

For over two years, the American Farm Bureau Federation and the Maryland Farm Bureau Federation have been bending every effort to secure an increase in the tariff on canned tomatoes and tomato paste. On June 24th, 1927, the Tariff Commission ordered an investigation and study of the industry. This investigation was completed in 1928 and a hearing ordered for September 18, 1928.

The proponents were represented by the Washington representatives of the American Farm Bureau Federation and the Maryland Farm Bureau Federation for tomato growers and the Counsel of the National Canners' Associa-

tion and Tri-State Packers' Association. The opponents to an increase in the tariff were Italian importers from New York City.

Maryland producers and canners were among witnesses called.

Briefs were filed by all parties on November 19th, 1928. It is hoped a decision will soon be reached and that it will be as favorable for our tomato producers as that recently secured by our American onion producers. In the onion case, which was also presented for the producers by the Farm Bureau, the President under the flexible provision of the Tariff Act has just ordered a full 50% increase,—namely from one cent to one and a half cent per pound.

Farm Relief Legislation

In pursuance of the instructions of this convention one year ago, your State office exerted every influence last year to secure the passage of the so-called McNary-Haugen Farm Relief Bill.

I am glad to report that four of our Congressmen—namely T. Alan Goldsborough, Wm. P. Cole, Stephen W. Gambrill and Frederick N. Zihlman—all representing rural districts—voted in support of the bill. The two city Congressmen, J. Charles Linthicum and Vincent Palmisano, voted against the bill as did our two Senators,—William C. Bruce and Millard E. Tydings. The bill was passed but vetoed by President Coolidge.

Japanese Beetle

Your State office again joined with other agricultural forces in the State under the able and earnest leadership of Dr. R. A. Pearson, Dr. Thomas B. Symons and Dr. E. N. Cory in protesting the desire of some Federal officials, as well as those from some other States, to have the State of Maryland included in the Federal quarantine.

I am pleased to report that again the Federal authorities have deemed it best to exclude Maryland (except one portion of Cecil County) from the quarantine and to permit our

State government to proceed again with the Maryland plan of treating the several isolated spots where the few beetles have been found.

Just last week, I received a letter from Governer Albert C. Ritchie advising that he has placed in the budget the sum of $25,000.00 per year for the next two years, to cover the cost of this treating work.

This fine example of co-operation of everyone,—of Governor Ritchie, of the officials of the U. S. Department of Agriculture, of those at the University of Maryland, of the various farm organizations and of the leading farmers, orchardists, nurserymen, florists, etc., only goes to show what team work and a definiteness of plan can accomplish.

I may say in conclusion on this subject, that under the Maryland plan of treatment, the beetle is being held in check and Maryland agriculture and floriculture is being saved hundreds of thousands of dollars annually.

Meetings

Your State officers have made every call possible to attend meetings of county and local organizations. These have been meetings of County Farm Bureaus, annual meetings, picnics, banquets, local meetings, boards of directors, executive committees, etc.

In addition, Mr. Davis and myself attended the American Farm Bureau Federation's, Southern Regional Training School and Conference at Chattanooga, Tennessee.

We have had occasion to visit Washington quite a few times on legislative or tariff matters.

All of this has consumed much time and called for at least 14,000-15,000 miles of automobile travel alone for your State Secretary.

Publicity

The organization has continued its publicity program as in the past. The BUREAU FARMER, published monthly, has been our principal medium of distributing information of our activities.

Two new departments utilizing a page each in every issue, have been inaugurated in 1928, namely,—automobile insurance and 4-H Club work. In addition, we have operated another department known as the "Farm Bureau Market." In this department any Farm Bureau member has had the privilege of advertising free of cost, those farm products he had for sale, or of advertising for those things he wished to purchase.

We have continued from time to time the practice of sending News Releases to over sixty county papers in this State.

Membership Plans

Up to this time, membership in the Farm Bureau has been measured in three-year cycles. The second, three-year cycle is just coming to a close. In order to plan for a continuation of this membership, your State Board of Directors authorized a new form of membership contract known as a "three-year continuous membership agreement". These agreements have been printed and furnished all counties.

Your State office has prepared and had printed a booklet on the "Aims and Accomplishments of the Farm Bureau" and two forms of direct mail letters, in four-page folder style,—one form intended for the present membership and the other form for those at present not members.

After some negotiations we have also secured the agreement of the Organization Department of the American Farm Bureau Federation to send into Maryland a trained Organization man to help in the renewal of the present membership and to strive to increase our membership.

May I make this appeal,——No organization can exist or thrive if the whole burden of membership maintenance has to be carried by a few loyal men and women.

This, therefore, is my appeal: Will not every one of you men and women here today, pledge that you will do these three things during 1929:

1. See that you are enrolled as a member and that your dues are paid regularly each year.

2. Attend regularly and take part in all meetings of your Farm Bureau Local or County organization.

3. Use all your influence, continually to enroll your neighbors in the organization.

Remember that "there is no substitute for membership".

Miscellaneous Service

There have been many other activities too numerous to take the time to enumerate here to you today. We have tried to report on them regularly in the BUREAU FARMER.

Future Objectives

So much for the past. What of the future? May I suggest the following for your consideration:

1. I recommend that because of the wide spread thieving from farmers throughout the State and the lack of special training of the present county sheriffs and deputy sheriffs, we urge the establishment of a trained State Police force with full police power. All that is necessary to secure this is the enactment of a law enlarging the present State Motor Police and delegating to them general police powers.

2. I recommend that the Farm Bureau establish a Vigilance Service to co-operate with said enlarged State Police in apprehending those thieving from Farm Bureau members. Other State Farm Bureaus' have organized such a Vigilance Service. Through the posting of members' property and the offering of rewards for information causing the conviction of thieves, they have done much to apprehend thieves and to reduce the losses of their members.

3. I recommend, that we set up a Farm Bureau finance and holding company, through which we can bring together all our various supply services—State and county—for better financing and control and co-ordination.

Likewise, as we set up new enterprises such as our Wool Pool, etc., we would finance and control them by and through the same agency.

This is the day of consolidations and chain-store operations. If we expect to meet competition and likewise keep the enemies of co-operation from splitting us apart by every kind of device and propaganda, we must so set up our business machinery that we not only control our finances, but, also our subsidiary units and their personnel. By this means we can inaugurate the best of business practices and secure and keep the best of trained management and personnel.

This is the day of the survival of the fittest. Are we, as we are now set up and operating, fit to meet and survive the competition that confronts us on every hand? I think not, thus this suggestion and recommendation.

4. I recommend that the Maryland Farm Bureau have as an objective the organization of co-operative fruit and vegetable Commission Agencies on the Baltimore and Washington markets and a co-operative Live Stock Commission Sales Agency on the Baltimore Market.

Each of these should be set up as subsidiaries of the Farm Bureau finance and holding company.

Naturally this expansion and control of the agencies serving us farmers with our supplies or in selling our products is possible of enlargement as our needs require.

Nothing, in my mind, is more distressing or unfortunate than to see farmers' co-operative service agencies, that have been set up by a farmers' organization ilke the Farm Bureau, forget their obligations to the rest and "go it alone" on a program that is selfish and which tends to break down the whole program of interco-operation between co-operatives.

In closing, may I thank you for your attention and your co-operation in the past and may I also express the wish that the year 1929 may bring to you and yours, peace, happiness and prosperity.

CHAIRMAN MASSEY: That is a very fine report. We will now have a song.

CHAIRMAN MASSEY: We are a little ahead of our schedule, which is something unusual for a farm meeting I believe. If we have lots of singing we seem to get in better spirits. Going out to Chicago we had seven out of thirteen who were very good singers. They sang most of the way out to Chicago and back. You heard what Mr. Davis said about the County Agent getting caught in the upper berth. Well, he was a real fellow, and I think all county agents in the State are. The next day somebody asked him out in Chicago what happened to him in that upper berth, and this was his version of it. He said, "I was sleeping along nicely and peacefully, and that scoundrel of a porter hadn't fastened my bed down right. The jolt of the train unhooked it, and I came near being smothered, and when I looked out all my friends had hold of that thing to keep it from shutting up on me!" (Laughter).

The Farm Bureau in 1928 rendered one of the biggest services it has ever done in my opinion for the farmers of Maryland in bringing the automobile insurance in here, and we have with us today the State Agent of the Farm Bureau Mutual Automobile Insurance Company, Mr. H. E. Baumberger, who will give us an address on that subject.

REPORT OF THE FARM BUREAU MUTUAL AUTOMOBILE INSURANCE COMPANY

BY H. E. BAUMBERGER

As this is the first time I have attended your Annual Farm Bureau Convention of Maryland, I want to say that I am mighty glad to have the pleasure of being affiliated with such a group; not only the folks who are present today, but the Farm Bureau as a whole.

As I attend the different Farm Bureau meetings and as I look over the group here today, it is very clear to me that these are the days of organized effort;and I hope that each session of this convention will impress upon those present

the need of considering all the problems of agriculture from the broadest possible viewpoint.

In reading the histories of organizations and organized efforts we find that in the past 30 years, all production, except agriculture, has become highly organized. The organization of agricultural groups has a very recent origin.

I think that the members of the Farm Bureau today have a different conception of the Farm Bureau than what they did when it was first organized with the castle building ideas which the members had in mind.

The Farm Bureau today is not looked upon as a cure for all agricultural ills, but its members are looking upon it as a means to solve the basic problems; not only production, but marketing, purchasing, legislation and Home and Community development.

The farmer today is a business man, with a large investment in land and operating equipments, and our efforts should be to develop conditions which will place the farmer on a basis of equality with men in other forms of business.

The need today is to strengthen our County Farm Bureau units and to have a membership interested in the broad program for which Farm Bureau stands. The main points which we have emphasised so many times are—give the farmer a voice in marketing his products, reduce the cost of production, give him a voice in legislation, and help him build a better community in which to live. But none of these can be accomplished without membership; membership is the backbone of any organization and one thing the members look for is a service for their membership dues, not only an intangible service, but also a tangible one.

Each year the Farm Bureau is adding links to this chain of services. Last Spring your State Board of Directors added a very strong link to this chain. Farm Bureeau Insurance is going a long way in filling this need of a direct and tangible service.

Some of you probably wonder why the Farm Bureau is selling automobile insurance and the relation between the two. Let me say that if conditions were the same today as they were when the Farm Bureau was started, over 16 years

ago, you would not need automobile insurance, but today conditions are different. I do not mean that just the driver's risk is greater today, but the public moral condition has also changed. A few years ago if you bumped into a man and perhaps injured him, you could settle for what is right, but today after reading the papers you can easily see where people are asking for more than their damage amounts to.

After the Farm Bureau had several inquiries for insurance, their first step was to investigate and find out what could be done along this line. They found that very few farmers were carrying insurance because the cost was too high. It was nearly as high as that which was carried by the city man. On further investigation they found that about one out of every ten farmers were having accidents each year and a very small percentage were carrying insurance, or in other words more than 2,500 farmers in Maryland have an automobile accident each year. Furthermore, there was no limit as to the amount one accident might cost them.

Upon further investigation of other insurance companies, the Farm Bureau found that the cost was based on city risks, as that is where most of their insurance was written; a very liberal renewal being paid to agents each year. The companies are owned by a group of individuals or stockholders who put their money in them and naturally expect large dividends in return.

After gathering these facts the Farm Bureau in the Spring of 1926 organized and financed the Farm Bureau Mutual Automobile Insurance Company. The Comapny was organized as a mutual company because mutual is nothing less than co-operation. In this Company there are no dividends being paid out to stockholders, and just farmers' cars are insured, thereby having a much better risk than if we were insuring city owned and operated cars. No renewal commissions are being paid to agents, thereby cutting down our operating cost to a minimum.

You are probably interested in knowing something about the results of a company organized on this basis. It brought the cost of automobile insurance down more than half of

what the same production would cost in other companies. The Company at the end of 1926 after its first eight months operation had secured 5,200 policyholders. In the next 12 months operating or at the end of 1927, it had secured 16,000 more, or a total at the end of 1927 of 21,000 policyholders. Then in the Spring of 1928, the Company expanded into other States and is now operating in seven different States with over 46,000 policyholders and resources of over one million dollars. After these facts you can see that this is strictly a Farm Bureau project, organized by the Farm Bureau, financed by the Farm Bureau and is being run by the Farm Bureau.

What is this service doing toward building a Farm Bureau? Just let me drop a few hints along as to the benefit of this insurance to the Farm Bureau. In the first place we need agents in the field to tell people about Farm Bureau Insurance. We secure these men by picking out those whom we think and whom others think are the most reliable men in each community, and each one of these is O. K.'d by your State Secretary. Therefore, he knows that each one is a Farm Bureau Member and has the ability to talk Farm Bureau.

Today we have over 60 trained salesmen in the field selling Farm Bureau Insurance, or in other words we have 60 Farm Bureau members talking to farmers over the State telling them about the services of the Farm Bureau. Since the insurance was started in this State last March our agency force has talked to approximately 9,000 farmers. Our agents cannot help but talk Farm Bureau when they are talking to a prospect as this is a Farm Bureau project.

Every bit of literature that goes out telling the people about this service, brings to their minds Farm Bureau because every piece carries the name Farm Bureau. The advertising that it is doing for the Farm Bureau is a very important part. We all know that advertising pays. If it did not your retail stores and large automobile industries would not be carrying full-page ads in the daily papers and spending an enormous amount for advertising.

Our Direct Mail System,letterheads and everything we send out is advertising Farm Bureau. We have mailed over 10,000 letters direct to farmers in this State, telling them about Farm Bureau Insurance and bringing to their minds the fact that the Farm Bureau is larger than what they perhaps see in their own counties. It is also bringing to their minds that the Farm Bureau is active and is trying to do something to help fill the farmers' need. In the counties where there is no Farm Bureau each policyholder is getting a free subscription to the Bureau Farmer. This we hope will educate them (if I may use this term) to the benefit and work of organized efforts, and will make it much easier to secure members when we get reeady to start a Farm Bureau. This is just another link that has been added to the chain of service. I thank you.

CHAIRMAN MASSEY: We are very fortunate in having with us this afternoon Mr. Murray D. Lincoln, Executive Secretary of the Ohio Farm Bureau Federation, who will give us an address, "A Vision of the Future of Organized Agriculture." Mr. Lincoln. (Applause).

"A VISION OF THE FUTURE OF ORGANIZED AGRICULTURE"

BY MURRAY D. LINCOLN

Mr. Chairman, Ladies and Gentlemen of the Farm Bureau of Maryland:

First may I say that I appreciate the opportunity of being invited to the State of Maryland to this splendid meeting, and hope that I may be able, out of my eight years of trying to build a Farm Bureau program, to give you something that may be of benefit to you. Whenever I go into another State, however, I am always conscious that conditions may be different, and consequently some of the things I may say may not particularly fit your set-up or your conditions. Yet, at the same time, I can't help but think that we all have about the same objective.

I am always somewhat at a loss to know just where to begin and what kind of a particular story to tell. Like the little boy who tells a story of his teacher who had been earn-

estly striving to show her pupils and have them understand the difference between prose and poetry. After she had given what she thought was sufficient instruction and showed them by example, she asked if any of the pupils could give examples of both prose and poetry. One little fellow said he would try it. He started out and said:

"My Aunt Jemima set on a hill,
And if she hasn't moved away,
She sets there still."

The teacher said yes, that that was a good example of poetry. Then she said, "Give me an example of prose. He wiggled a minute and said, "My Aunt Jemima set on a hill, and if she hasn't gone away, she sits there yet."

The teacher said that that was good. Then she asked if anybody else had an example. Little Willie thought he'd try it, so he started out and said:

"My Aunt Jemima fell in a well,
And if she hasn't crawled out,
She's gone to——

"Say Teacher, which did you want, prose or poetry?" (Laughter).

Consequently, I feel I don't exactly know just what you want, prose or poetry. The topic assigned to me by your good State Secretary is, "A Vision of the Future of Organized Agriculture." That is the role that I am most often asked to take in our own Farm Bureau meetings back home. Having attempted to fill in there many times before, I am fully conscious of its dangers. You are apt to be asked some embarrassing questions, and if you make a forecast, and the things that you say do not come about, or the objectives that you outline are not finally reached, the question is asked, "Why?" If those objectives are reached over a course of time they are pretty apt to forget the forecast or to give credit to the fellow who made them, in the joy of accomplishment and in the working out of the objectives.

However, some one must assume this responsibility of trying to chart the way, of trying to set some stakes ahead

towards which this great body will attempt to move. They tell us out in the State once in a while that the Farm Bureau is all sold in the last eight years. I think I can say truthfully, because I was the fortunate or unfortunate individual, which ever you want to say, of starting in there eight years ago with one secretary and two little rooms in the Southern Hotel, and have seen the thing grow until now we have our own building, co-operative agencies co-operating with us, doing over $25,000,000 worth of business in our own office and seeing our own personnel grow from the one secretary back in 1922 to nearly 200 employees that the Farm Bureau and its affiliated agencies now have—we have, I think, reached some objectives. But I know this; we no more than reach one objective before so many more open up that are always looking ahead, and I think I can say with reasonable assurance that everything that was ever officially outlined by the State Farm Bureau and the county farm bureaus has somewhere, to some degree, been approximated.

True, we haven't done all we'd like to do. We have made many mistakes, and probably are going to keep on making them so long as we are human; but if I can point out to you what I think the farmers in Ohio through their Farm Bureau are trying to do, it may give you at least some basis for thought as to some things you might do here. I appreciate, too, the opportunity of coming here as I did last night, and today sitting in on some of your sessions, because I am getting suggestions from you.

My vision of the future of organized agriculture can be in the main, I think, outlined in two points. First, a united agriculture, and second, a profitable agriculture reflecting a better standard of living in the farm home of America. The one thing that I am more concerned with today than anything else is first — a united agriculture. Some of us were born on some of those old rocky New England farms and out of them have secured a reasonable living and furnished many of the men who went west to open up the tremendous big territory there. But the farming business has been such an individualistic one that we carry over into our

organization effort that same individualism which is one of the great drawbacks in farm co-operation.

I believe that the thing the farm folks must set their stakes for more than anything else is this united agriculture. I can see no hope for agricultural legislation regardless of what your opinion is, either from our State Legislature or from Congress, so long as the agricultural groups themselves are divided. I know of nothing that has brought me more sorrow or feeling of despair than to see before Congress two big groups of farm organizations, as one of the previous speakers brought out, often times constituting almost entirely the same personnel, one going before Congress asking for one type of farm relief, another going before Congress and asking for a second type. Until we can so merge our differences, until we can so co-operate among ourselves, I think we can hope for little on the outside.

Second, I believe that before we are going to get this profitable agriculture upon which I think the very welfare of this nation depends, we have got to think more and more in terms of federating the various activities, getting together, because we all, if we are sincere in the thing we are trying to do, have the same objective. So I say that until we can get together, the big organizations like the Grange, the Farm Bureau, the co-operative organizations and federate some of our small local co-operative units into bigger ones, we are not going to get the legislative recognition, we are not going to get the profits, we are not going to maintain the bargaining power in purchasing and marketing that we ought to have and must have, and I seriously doubt if we are even going to retain the bargaining power that we have gained up to date.

So from that let me plunge right into, in the short time I have, a discussion of what the Ohio Farm Bureau through its various activities is trying to bring about, and then if there are any questions afterwards I will be glad to answer them. We don't contend or claim, as I said before, that this thing is perfect. We have just tried to set up the different units to meet the needs that existed. When I left the banking business after having been the first county agent

in Connecticut, I spent five years in banking as an agricultural agent for a bank at Brockton, Massachusetts, and later in Cleveland, Ohio. I had during that time about given up hope of working with any farm organization, although it was the work which I wanted to be in, for the simple reason that on the dollar membership, with a lot of small disconnected co-operative associations that existed in the state at that time, I couldn't see very much future.

When the far-sighted leaders in the State of Ohio said that the Farm Bureau was going on a $10.00 basis, I realized that for the first time in agricultural history that I knew of, they were getting ready to put up sufficient money to tackle the real big business problems that lay before them. I don't want to discuss with anybody or argue with anybody as to whether the Farm Bureau program should be social and educational or business. It so happened in our State that when I took that position and when the Farm Bureau started we had the College of Agriculture and the Experiment Station which so far as I could see were amply and sufficiently taking care of the question of more efficient production. With the State Grange which had a wonderful history of fifty years of service to agriculture largely directing their attention to the social, educational and the legislative activities of the farmer, there was really only one place for the Farm Bureau to fit in, as I saw it, and that was along the economic side of agriculture. My own personal opinion, however, would lead me to attempt the same outline of activities, because it would seem to me that while farmers of this country have made splendid progress towards more efficient production and in many other lines, we have not secured the marketing advantage, the purchasing advantage, or some of the economic benefits that other groups have had.

So we took off our shirts and waded right in. Our first move was to set up our State Live Stock Association. Understand, up to that time we had a State Dairymen's Association, a Horticultural Association, Elevator Association, with some 200 co-operative elevators handling grain and supplies and the various other activities that most every

State would have which had come up through a long process of years of development. Very few of them, however, had actually gone into business. Most of it was confined to meetings to discuss their general problems and the producer as well as the dealer met together.

We started in first on our Live Stock Association work, setting up the county live stock associations which were actually starting in to collect live stock from the farmers and send them to the market. Our second step was to set up our own producers' commission firms at Cleveland, Buffalo, Pittsburgh, and Cincinnati. Our third step was to set up our own Eastern States Company, which today is shipping stock direct from the local concentration point or live stock shipping association down to the packers, some of them coming into Virginia, Baltimore, Providence, R. I., Detroit, and other places. That means wherever we can get enough hogs of apparently the same type, grade and weight together, we ship direct to a packer and avoid the expense and the loss of going through the general market.

That association at the present time is doing more than $15,000,000. a year in business. The Farm Bureau gave it its original capital, hired its secretary and put him head of our live stock marketing department. For the first five years we subsidized this work, but now it is self-supporting.

The second move we took was the organization of the dairy companies and the farmers. While there had been a dairy association in the State for some time, we put on a second man, and he organized seven of the big milk marketing districts, or six of the seven that now exist in the State.

The wood pool had been there for several years, but we put on its first paid worker to get right out in the field and collect all the wool he could.

The elevators, we couldn't get along with. That was probably our fault; maybe it was theirs. But anyway, as we found the situation the elevator associations were largely in the hands of the managers who resented any attempt to get them together. They had already started a State service for the buying of feeds, fertilizers, fences and coal, but after

two years of operation they turned it over to the Farm Bureau, and we organized a Farm Bureau Service Company, common stock of which is all owned by the Farm Bureau and which last year did $5,000,000 worth of business, and which in the last five years of operation has returned to farmers $700,000 in actual dividends. That is, we maintain the general price level of fertilizer, feed, etc., and reflects our savings back into the hands of the farmer.

In addition to that, the Farm Bureau set up transportation, legal, auditing, and other services, and I think we have the "only animal of its kind in captivity" in Columbus in the Grange and Farm Bureau where for the last five years we have maintained a joint legislative agent at Columbus. I want to say right here that it is one of the best things that was ever done. It has kept a full time paid man in the city all the time to whom legislators can come, and who has gradually come to be one of the outstanding legislative men, better equipped I think, to handle matters of taxation and other things governmental, than any other single man. We have today the fortunate condition whereby manufacturers and others look to our agricultural legislative agent as one of the leaders in all types of legislation. I don't want to hold out to you that we didn't have a lot of fun and a lot of trouble in the last seven or eight years. We sure did.

I will never forget the day that I had orders for 5,000 tons of fertilizer on my desk, and after having written to forty fertilizer agents handling fertilizeer in the State, every one of them refused us. So, I took our live stock man and gave him $300.00 and told him not to show up until he had 5,000 tons of fertilizer from somewhere to fill those orders. The first I heard from him was from Savannah, Georgia, and later Baltimore, your own city, and we had to bring that fertilizer way across the country simply because the fertilizer agents at that time would not deal with us.

I had a lot of fun back in 1921. It was just when the big slide started. Had pretty good information that Ford was going to cut prices on tractors and automobiles. I knew well, because corn was selling in those days for 35, 38 and 40 cents a bushel; yet, none of this other stuff had come

down. I knew full well that it had to come down. The fertilizer prices that went out in the spring of 1921 were $34.20 for 16 per cent acid phosphate. Just as a hunch I sent a telegram to 88 county farm bureaus to defer purchases of machinery and fertilizer until later on. Of all the fun you ever saw, it began to happen. The machinery men immediately called a State-wide conference. The fertilizer men immediately called a State conference, and they asked me in, thinking that I was a representative of the college, and and wanted to know why in "Sam Hill" I sent that telegram. I told them just because as a representative of the Farm Bureau it was my duty to protect our members. After they got it through their heads that we were a voluntary association and the State didn't pay me, they had to back out, but needless to say, things slid and we bought 16 per cent acid phosphate that year for $23.50, and in one or two cases at $21.00.

Since that time we have been building up our business steadily until last year we handled nearly 60,000 tons of fertilizer or 18 per cent of total tonnage of the State. more than any other three fertilizer companies in the state handle. We handle about 10 per cent of the feed, more than any other three feed companies handle. Our producers' commission firms at the present time are handling nearly 30 per cent of all the live stock that comes on the market. Our wool pool is handling about 30 per cent—it ought to be 60 per cent; I don't know why, but that is the case. Then we have our dairy associations. Altogether $125,000,000 worth of business is being done.

Now look back eight years. How many people said it just couldn't be done? I, at that time was employed by Ambassador Herrick in his Cleveland Bank, and he got very put out with me because I resigned that position to go with what he said was a bunch of unorganized farmers who never could get together, and never had gotten together. But he has since told me he thought it was one of the most important moves I ever made in my life, because he said farmers are going to be organized, and the well-being of this nation requires that they do so. When we look back over these

eight years we some times wonder how we did it, but it has resulted.

I am going to have a very hard time to tell you in the thirty minutes that is allotted me all I want to say. During this time we have tried to keep a little bit ahead of the gang, so as the co-operative sentiment developed we were ready for the next step. Today in the State of Ohio, as I say, we have these various county live stock associations, we have our 200 elevators, co-operative elevators, farmer-owned; we have our seven big milk marketing districts or associations, we have our wool pool and we have our egg association.

Unfortunately, we had just about the same experience you folks had down here. We no more than had these fellows set up—they are good folks, all of them, just folks like you and me—and the Farm Bureau spent as high as $200,000 a year to get them set up, and paid their expenses until they were established. Then just like a boy, as soon as he gets to maturity, some of you folks have had that experience, they all made up their minds they didn't need the Farm Bureau any more. That was very disturbing to me, but we are finding now as never before as competition comes which these folks have to meet, that they are beginning to come back more and more.

We have some situations that have to be corrected, particularly with these milk men. I told them five years ago that they ought to go together in one big milk marketing district, but they couldn't settle their personal differences, after they divorced themselves from the Farm Bureau. What do we have today? Up in Cleveland we have one strong milk marketing group. The Toledo group is trying to put milk in Cleveland through non-co-operative methods. The Pittsburgh Co-operative is trying to put milk into Cleveland through non-co-operative dealers. The Akron group is trying to get into Pittsburgh with their milk through non-co-operative dealers, and we are going to have a grand fight there during the next six or eight months unless somehow we can get these different fellows together.

These elevator fellows are good boys. They have done a splendid job in cutting down prices for stuff sold and raising prices for grain in their local communities. But what do they do? They are going way over here in another territory trying to get it away from the fellow there. Again we say that sooner or later we have got to have a federated organization to put these things together. Meanwhile, what is happening? One big milk marketing group from down in your county somewhere, I don't know just where they come from, but their name is either the U. S. or the National Dairy Products Association. They have come into Pittsburgh and secured the biggest distributor there, they have come into Cleveland, Youngstown, Akron, Columbus, Dayton, Springfield, Lima. The fellow who is buying is getting it all together in one great big group, and I saw in the paper last night, your own paper right here, where that same company is issuing stock and maybe some of you folks are buying it down here. I think you have got a lot more money here than we have; at least, it looks so the way I see automobiles and all going on here. They are coming into your market to raise money to go down and buy a big distributing plant in Richmond, Virginia.

Just before I left the other day I cut this out of the paper. Maybe you folks think it doesn't hold any significance for you, but I think it does: "Within three years this country will see the development of a chain store grocery system larger and commanding more capital than the General Motors or the U. S. Steel Corporation"—and they are big ones.

Here is the second one: "Very soon the bulk of the grocery business in the United States is going to be done by one, or at the most, two or three chain store organizations." More and more the concentration of buying and distribution of farm products is getting into the hands of one, two, three, or four great big chain organizations. Where are we farmers going to be if we are out here all by ourselves in a little bit of units scrapping with each other for the market? It seems to me we are going to be in a pretty hard fix unless we can understand first that this

question of distribution and consumption of farm products is not a township, a county, or a State-wide proposition, and the only hope I see for agriculture is to organize it so strongly, so efficiently, that we can not only maintain our bargaining power, but reflect back to the farmer, and I think that is our objective, the last cent that we can possibly get for the production that comes off the farm.

Now, that is going to mean that some of us are going to pretty nearly have heart failure before we will give up our little local association or the pride we have in the State or something like that, but just you mind me, the National Dairy Products Company recognizes no State lines. The A. & P. Grocery system recognizes no State lines and recently the A. & P. have gone out in Wisconsin and erected the biggest milk condensing plant in the United States. One of the big drug chains has come into Ohio and is operating down there, and in western Ohio they are erecting the biggest ice cream manufacturing plant in our State.

Are they coming to the co-operative organizations to get their supplies? No, they go right out into unorganized territory. What we have got to do is follow-up with organization, and as I see it, we have got to meet organization with organization. What we are attempting to do right now is that very thing, and bless your heart, but don't forget that everybody isn't agreeing to it, to build along with these big groups just as efficient a piece of marketing machinery, as we can.

Back in 1926, when we organized our insurance company, we set up the Ohio Farm Bureau Corporation. We had this in mind eight years ago, because I know the fellow who finances the business controls it, and the trouble with we farm folks has been that we have been letting the other fellow finance our business. The live stock buyer has financed marketing live stock; the wool buyer has financed marketing wool, etc. The fellow who paid us the money kept it until the market was right and then sold

it, and oftentimes, as you know, secured for that one operation as much as you and I get for raising it.

One of the big jobs farm folks have got to learn, and learn it soon, is standardization. I just want to throw that in. We had a splendid discussion of that last night in the Horticultural meeting here, and I wish all of you could have heard it. Up in our State it is one of the hardest things for us to learn. In 1923, I had the privilege of going across the water to study co-operative marketing in some eight countries along with the rest of the Farm Bureau folks, five of us, and in one day while driving all over that little Kingdom of Denmark, I only saw one black and white hog. He was spotted, more white than he was black. That is one thing they have learned, what the market wants, and then grow that particular type of product.

Out in our country, John Jones thinks a red hog is the only kind of a hog there is, and right across the road is Tom Smith who swears by all that's holy that a red hog isn't any good, and a black hog is the only kind fit to raise. What the farmer has got to learn, as I see it, is to find out which hog furnishes the kind of meat that the market will pay the most for, and forget our prejudices in raising it.

One of the best illustrations I know of is, this question of eggs. By this time you know I am from Down East, from Cape Cod. They have a lot of fun with me because I talk so funny, but it doesn't sound funny to me. They say I say "hoss' instead of 'horse' and a few things like that. Down in our country the women, for some reason, I don't know why, swear by a brown egg. They will just get right up and say with all the crankiness they have that a brown egg makes a better cake than a white one. In this end of the country most of the women want a white egg. Chemically, I think they are the same. But the thing we have got to learn as farmers, is that if Boston wants the brown eggs and will pay a premium for them, give them to them; if New York and Baltimore want white eggs and will pay a premium for them, give them to them.

As long as we put white eggs, and brown eggs, and little eggs, and big eggs, and once in a while a good egg and a bad egg in the same basket and send it to market, we are not going to secure the price we should.

What is happening? Mr. Davis and I went around the block here last night, and I thought I'd like to eat an apple before I went to bed. I walked around here trying to find a fruit stand and couldn't find one. And that is all I was looking for, too. This morning I found some, but what did I find here? I understand you folks have some of the finest land in the country to raise apples on, but you go to one fruit stand after another, and what do you find? Apples from Wanatchee Valley, way across the country. You go into the New York market, and what is the egg that is setting the price there? Pacific Coast eggs in the main. They can buy a gross or a carload of those eggs, and every last one comes up to a standard. That is what we have got to learn.

What we are trying to build in Ohio now, is the most economical system of collecting farm products and the distribution of farm supplies, that we can possibly build. We have set up the Ohio Farm Bureau Corporation. Another reason for our going into that was this: We have seen elevators, live stock associations, milk marketing companies and others grow until they are doing a lot of business. Our directors are largely men who give their time voluntarily like you and Mr. Davis. I couldn't see in the scheme of things where we could ask the average farm member of these boards and co-operatives to give the time nor to sacrifice the money necessary to train him to get into all the ramifications of merchandising, bookkeeping, financing, all those things that are necessary to make a business succeed. Up through the ownership of this institution there it is purely co-operative. The Farm Bureau owns all the common stock, and if anybody doesn't like the management, they, through Farm Bureau Directors, can get another one. But from the standpoint of operation, it is just as hard, cold-blooded a business as I know

of, and we are building it just that way because we know we are going up against some of the keenest brains, some of the highest-priced brains there are in this country, and we can't tolerate any inefficiency when it comes to the operation of this business.

Here is the County of Clinton (showing a chart), which is one of our general farming counties, largely, though, going to live stock. If you will notice these little dots around here, they are towns, centers. Nearly everyone of them has an elevator. Most every one of them has two or three cream stations collecting cream for some of the big companies. Nearly every one of them has a live stock man, or did have five years ago. Nearly every one of them has one or two fertilizer agents. I just don't dare tell, you wouldn't believe me, the amount of distributing machinery that was in this county and for which the farmer and consumer was paying, and we said, "It is too much." We don't need all that.' What we are doing today is this. We have established what we call a branch of the Ohio Farm Bureau Corporation which is a stock corporation organized under our corporate laws. The common stock, all of it, is owned by the State Farm Bureau, but the preferred stock, the stock from which we get our finances is being sold to farmers or anybody else.

We have established here at Wilmington, a warehouse. Right across the track from the warehouse are the concentration yards for live stock. We are, just at the present time, outlining—we haven't got it in this country yet—a system of truck routes bringing in cream, butter, and eggs from the surrounding country into Wilmington, and then ship them on to one of the milk marketing groups. We have another branch here at this point, another one up in New Vienna, and down here we have about $15,000 in yards and a warehouse. Here we have about $14,000 in a big covered pen and big warehouse. We leased the old B. & O. station from the railroad down at New Vienna, turned that into a warehouse, and are using the public stockyards over here. We want one at Manchester or

Midland, and we may want another one. But I am here to tell you those three, if not four groups can take the live stock, the wool, the eggs, the cream, and the poultry as well as distribute feed, fertilizer, insurance, oil, tires, etc., a good deal more effectively than could these 25 or 30 independent operating dealers. What we want to do is to cut down the overhead and so build up a volume of those things going in and coming out to the farmer, that competition can't meet us, and with that amount of business be able to secure from different financial operators or different financial agencies, the money on which to operate.

We have, just in the last two weeks, secured a recognition that is only the beginning of what is coming. A Cleveland bank and a Cleveland storage company have come down and offered us this system. They are organized under the State warehouse act. We leased them our warehouse at Wilmington for a dollar a year and other considerations. Actually, as far as operation is concerned, except a little sign up on the warehouse, they give us the warehouse and a receipt for all the feed, fertilizer, coal, fence, grain, etc., we put in there. We take those warehouse receipts to the bank and get 80 per cent of the market value right there, so that we can go on and stock up, and as we take inventory out we pay back the bank. They couldnt afford to run all over the State and offer that to 200 local elevators, but they can when this thing is all put together.

The bookkeeping is all done in Columbus. We put in big billing machines. If any of you have accounts at the department stores you know what they are like. You get the account two or three days after the close of the month, I think. Some of our little local units, before they were taken over by the corporation, never sent out accounts, receivable statements, to the farmers, and in one of them the farmers for two years were under the impression that they had a surplus of $800 in their local company. However, when we took them over and the bills were brought to light, they had a $5,300 deficit because

they didn't have the time or the money to supervise that thing the way they should have done.

This company will give us 80 per cent. of our operating capital, and they give it to us at one and a half per cent. above the Federal Reserve Bank discount rate, which last summer meant 4½ or 4¾ per cent. money to us. I don't think there was an elevator or live stock company, or anybody else in that State borrowing money to carry its inventory for any less than 6, and a lot of them were paying 7 per cent.

That is just the beginning of this recognition. At the present time the trade is getting the idea that we are building a chain-store service unit out here, and today, our biggest trouble is to keep from taking on things that some of the biggest companies want us to handle. Just Monday I left a conference where one of the biggest feed companies in this country has offered us a proposition to take over their mill on actual operating basis. I suppose we are just like you folks. We did buy our feed from the American Milling Company, and later on, because of some differences, we purchased elsewhere.

The Ohio Farm Bureau has recently spent $1,000 to find out what feed can be mixed for, and we are convinced that it can be mixed for $2.00 a ton instead of $3.25 which we are paying, as well as some of the profits of buying the raw ingredients. So we are about ready to build a feed mill. This got noised through the trade, and just Monday a feed company came to us from Chicago and has offered to turn their mill over to us on a cost basis, 6 per cent. on the investment, and we have a share of the management as well as all the profits. It is the fact that they saw a great big chain of these service units built up which brought them to that.

Now, you can understand this, can't you—if this unit takes the live stock, the wool, the poultry and eggs and the cream, and ships it on, you see we have our different sales agencies all set up. We have a grain department. Lots

of it comes to Baltimore. We have demonstrated that we can secure nearly two cents a bushel more for grain than a local elevator can sell it for themselves. Thirty per cent of our business in our grain department comes from the old line trade, and don't you forget it, they never would give us a barrel of wheat or corn unless we were giving them as good a price or a better one than they can get from anybody else. Yet, some of our co-operative managers can't see it yet and won't come to us.

We have our egg sales agency already established, and we are shipping lots of eggs into your territory, too. We haven't got a produce outlet yet, although we are about to arrange that, because in one of our counties the farmers raise a lot of potatoes and want us to take that over. We have our commission firms on the different markets. We have our milk marketing groups. We have our wool growers.

For the time being, the corporation in itself is not concerned with the selling of those commodities. We are going to use our present existing co-operative agencies. But I am just telling you this, that if these seven different milk marketing groups don't get together we will have to go in, because they are going to be killed fighting together if the competition doesn't kill them off. They are pretty well organized under one direction. If you can get the point, what we are trying to do now is to get grain, eggs, produce, wool, milk and live stock coming through that agency as a service agency. It collects these and sends them to market. Down through the corporation come feed, fertilizer, seed, coal, oil, tires, transportation service, management of a local unit, finance, insurance, research and the other departments that we maintain with advice and counsel.

I told a banker in our city five years ago that this would eventually be the biggest single business enterprise in Ohio. He said "You can't do it." I said, "Why?" He said, "Three things. First, it is too big. The farmers won't follow you. Second, the farmers won't allow you to pay

salaries commensurate to get brains to run a thing as big as that. Third—Oh, it just can't be done."

Unfortunately, that gentleman passed away a year ago. I just wish he had lived 12 months longer, because one of the startling things to me is, we have had a lot of opposition to this from the co-operatives, from these little managers, I don't hold anything against them, but they think they would rather be big frogs in a little puddle than little frogs in a big puddle. But I tell them this: "As a manager today you are at the height of your earning power. Unless you can do a little more business and get a little more salary, you are at the height of your earning power. Why not come in on this scheme in which we are going to run a better service to farmers, and thereby they are going to like you better and be willing to pay you a little more money. You can come up in here and perhaps take over our machinery account, or you can be a field man and have seven or ten of these counties under your direction. You may go down here to the producer commission firms and become a live stock sales agent in a big system like this and get two, three or four times the opportunity that you have in just managing this little association."

I claim this, and I think you will support me, that to just the degree we render service to the farmer, to that degree we are going to get more support and greater bargaining power.

It is awfully hard for me to stop this story, for I haven't any more than just touched on it. At the present time we have fourteen of these units set up. We have fifteen counties waiting for us to come in. The egg association which four years ago drew away from us, last Thursday said, "Come on in and take us over."

In Ohio the farmers around that point went to their own milk marketing district and said, "Here, we just don't want to fight among ourselves any more. We believe that the Farm Bureau scheme is the scheme that is going to produce us more benefit than standing alone as one milk

marketing company. You come in and take us over," and next week the exchange of stock will be done on that.

In other words, what I am trying to have our folks see, is that a man may be the manager of a corporation. Yes, Ralph Strong is manager of our Cleveland milk marketing group. Our State live stock manager has charge of all these groups. Somebody else manages all these others. But after all, they are all farmers, and if we as paid men, can't get togther, how can we ask the individual farmer to co-operate? What we want to do is settle these little differences and turn around and build for the farmer or help the farmer or you folks, build through you. We are only the hired men doing the detail work to build the most effective unit to handle these products, to handle these supplies, and building big enough so we can have bargaining power sufficient to beat any combination chain of distribution or any of the rest of them.

As I said in the beginning, if we can just look forward to a united agriculture, to a federated agriculture, and to an agriculture that will return more profit to the farmers I think we are fulfilling our mission. Granted, my work has to do mainly with the business phase of it. Our Farm Bureau activities are divided into two big groups,—membership, legislative and home and community under the direction of Mr. Palmer, our President, and all the business activities are under my jurisdiction as Secretary of the Farm Bureau and manager of the corporation. But we all have one objective, the making of agriculture more profitable in order that we may reflect a better standard of living, and to bring all those things that you and I want,—education for the children, better roads and better schools. But we want a fair price, and that has been one of the troubles out in our State. The farmers have been taxed too heavily; through our legislative program we are eliminating a lot of that. What we are trying to do is raise the standard of living, but in order to do that we have to have the money to do it. It looks to us that through some scheme like this we can reflect back into the hands of

the farmers more dollars for the things he produces. That is our objective. We have just started, but we feel we are making splendid headway, and the thing that gives me more satisfaction than anything else is that apparently we are securing almost the united support of the farm folks themselves, where only a year ago this institution was getting a good deal of criticism.

Along with these things, of course, has come our insurance. I think we are already looking forward to the time when we will have life insurance and accident insurance policies. I think before long we will have a credit corporation that can not only mobolize our credit for these co-operative enterprises, but perhaps help the individual producer as well. In fact, my vision of organized agriculture—well, I don't know, I wouldn't dare to say just what I think we can do, but it depends on you, it depends on every last one of us. We can go just as far as our vision will let us. Farming has produced the brains that are now bringing about other big combinations. Agriculture is the basic industry. The welfare of our nation requires that it be put on a more permanently profitable basis. So if you and I just have the vision and can settle our individual differences, and can get together as we ought to get together, I thing that the future is unlimited.

One of the big things I think we ought to do is use what we have. Let me tell the story. We have the Grange, the Farm Bureau, the College of Agriculture,—we have these co-operative organizations, and not enough farm folks use them. It is for the good of the farmer as well as the association, so maybe the vision a certain little lady gave another fellow can be applied in this case. They tell the story of two colored folks down South who were having a little love affair. Sambo was awfully bashful, and things weren't going as fast as Dinah thought they should. So one afternoon they were out walking down a cow path, Sambo in one wheel path and Dinah in the other one. As they went down the lane they first discussed the weather and got that all settled, and next they came to family relations

and got them pretty well fixed for another week. Then, in order to keep up conversation, and not knowing exactly what to say Sambo sprung this. He said, 'Dinah, if you wasn't what you is, what would you be?"

She thought that was kind of funny, but she said, "Well, if I wasn't what I is I think I'd be a great big red rose."

That was all right. They walked on a little ways, and Sambo didn't come back again, and Dinah said, 'If you wasn't what you is, what would you be?"

Sambo waited for a long time, had been waiting a long time to say something real nice to Dinah, and he just hadn't been able to get up his courage, and this was his chance. He said, 'Dinah, if you was a big red rose and I had my choice about it, I think I'd be one of these great big centipede bugs that have a hundred arms so I could hug you more."

She looked at him a minute and then said, "Aw g'wan, you wouldn't, because you isn't usin' what you got!"

(Laughter and applause.)

PESIDENT DAVIS: I am sure we all enjoyed this very splendid address, and I think we can learn a lot from it. We are always glad to have Mr. Lincoln with us. He has been with us several times, but I think this is the best talk I have ever heard him make. I only hope he will have an opportunity to give us another at some future time.

Now, we have these committees to announce:

Credentials Committee

C. T. COCKEY, JR., *Chairman,*
C. A. DUVALL, C. S. CHESSER.

Constitutional Amendments

M. FRANK HOLTER, Chairman
J. W. JONES, JOHN E. PATTEN,

Resolutions Committee

E. THOMAS MASSEY, Chairman
W. S. SPENCER,
CHARLES I. BOYLES,
ROY WEAGLEY,
GEORGE C. MOORE,
R. SMITH SNADER,
AMON BURGEE,
H. L. DAVIS.

PRESIDENT DAVIS: This ends our program for today. Has anybody anything to bring before the meeting?

SECRETARY STEWART: Mr. Chairman, there is one man who is not here today whom we all miss. We know his heart is here with us, and he'd like to be here. I believe it would be right and proper if this meeting would pass a vote expressing to Dr. R. A. Pearson, President of the University of Maryland, hope for a speedy recovery from his illness, and that we are missing him here at these sessions. I make that as a motion.

(The motion was duly seconded and carried by a rising vote.)

PRESIDENT DAVIS: I think that terminates the business of this session.

(The meeting adjourned at four-twenty o'clock.)

THURSDAY AFTERNOON

January 10, 1929

The Second Session convened at two-thirty o'clock, President Davis presiding.

PRESIDENT DAVIS: The meeting will come to order. It gives me great pleasure to introduce to you your presiding officer for this afternoon, Mr. E. P. Cohill. Mr. Cohill is the father of the Farm Bureau in Maryland and really needs no introduction, but these introductions are customary, and we like to conform to custom. Mr. Cohill will preside this afternoon. (Applause.)

CHAIRMAN E. P. COHILL: Fellow Farmers, Ladies and Gentlemen: This is my thirtieth year in farm work in Maryland, and I am fully convinced now after thirty years of experience, that had we commenced from the very be-

ginning by getting the women interested in our work, we would have been far ahead of what we are now. That is about all I can say.

The first speaker who will address us on, "The Farmers' Tax Problems," is Mr. John C. Watson, Director, Department of Taxation, Illinois Agricultural Association. I have had the pleasure of meeting Mr. Watson several times out in Chicago at the annual meetings. Mr. Watson. (Applause.)

"THE FARMERS' TAX PROBLEMS"

By JOHN C. WATSON, Illinois.

Mr. Chairman, Ladies and Gentlemen:

I ought to feel quite at home in the meeting this afternoon. This looks to me like an Illinois program, because both of the other speakers this afternoon are from the State of Illinois.

Now, I trust that in giving an Illinois flavor this afternoon, that we shall not forget that we are a part of the United States of America, and as such have an interest in the State of Maryland as in every other state of the United States.

I have come here to discuss with you a question which is causing increased concern and unrest in every part of the United States. I don't believe that the State of Maryland is any exception. It is a subject which in the last few years has been receiving increasing attention in every farmers' meeting, and not only in farmers' meetings, but in other meetings. This question is stated as the farmers' tax problems.

I am going to assume that I can speak somewhat more widely than about the subject of farmers' taxes alone. It is impossible, ladies and gentlemen, to discuss in any systematic way the subject of taxation as related to a single class of people or to a single source of taxes, because the great problem of taxation—perhaps there are two great problems of taxation, but the first great problem of taxa-

tion is the proper distribution of the tax burden. The moment you begin to change your taxing system or to consider your taxation system in its chief features, that moment you begin to refer to the burden as it lies upon other people or to consider the effect of that burden as it lies upon other people.

Before I begin on the subject of taxation, I wish to bring to you people the greetings of one of your sister federations of this country, a federation which does not carry the name, but which does carry a name older than the name "Federation," the name being the Illinois Agricultural Association. That is the Farm Bureau Federation of the State of Illinois, and I take great pleasure, as I am sure that some other States are doing by wire or otherwise, and as one of the speakers this afternoon will do, to bring to you greetings of that organization. (Applause.)

Now I shall turn to the subject. I trust you people will not be unduly concerned by the number of documents which I have here. It is necessary for me to refer occasionally to some of these documents, and I have them here in order to refer to them, but I shall not often do so.

The three great problems of farmers—there are more than three, of course, but the three great problems of farmers today I think are, first, the problem of the individual economic production, a problem which is being taken care of, and has been well taken care of in past years by our agricultural colleges and agricultural experiment stations. I shall not pause on that subject. That is not my subject.

The second is a subject which is not yet solved in this country, the problem of the economic distribution of the farmer's production, a subject which I assume the second speaker from my own Congressional District in the State of Illinois will be talking on.

The third subject is the subject on which I am proposing to talk to you people. Why is taxation one of the three important subjects? It is because under anything but a proper taxation system, (and certainly none of us

will claim that we have achieved that) may we see all the benefits of efficient production, and all the benefits of efficient distribution of our products. When we do, we shall receive an equitable portion of the consumer's dollar. It is being discovered in parts of this country that the increase in the burden of government which is being laid upon certain classes of people, not only farmers, but including farmers, seems to be increasing more rapidly than the returns which they receive from their property, and for their labor. Of what avail would it be to us, then, if we produce efficiently and if we have the proper distribution system if the cost of government is going to take an increasingly large proportion of those returns? We must consider this problem. We must consider it in our States; we must consider it from the point of view of the United States.

I am going to ignore this question from the point of view of the United States, because you people pay your taxes chiefly for State and local purposes, and today the great problem of taxation from the point of view of the ordinary man, the point of view of the farmers, is the State and local problem; it is not the National problem. There has been a good deal of disputation in discussing problems of taxation in this country not to face the facts. There is a tremendous ignorance of what the facts are. There is also a tremendous amount of misinformation about the facts.

The subject of taxation has made important progress in recent years, and there are many things upon which the rank and file and the majority of the people can reasonably well agree.

You are never going to arrive anywhere on this subject if you haven't organization. The whole history of the dealng of States with this subject in the past has been a history of commissions, and committees appointed to try to find out what the difficulty is. They make their reports. You have a commission now which is making a report to your General Assembly. Those reports are read, they are

filed away. Nothing comes from them, or at least, nothing comes immediately. In most cases nothing ever comes from them. Why does nothing come from them? I am not going to say to you that these reports are always the kind of reports they should be. In certain respects they are always good reports. I never yet have seen any that were not good reports in any respect, and some of them good reports in every respect. But the reason why they get nowhere is because there is no organization behind them. You people know as well as I, and I say that with full consideration of the fact that I have a Congressman here listening to me—you know that legislation proceeds very largely from the direction in which the greatest pressure comes. If there is no pressure behind changes which are advocated, none will be made. You may be sure of that. That is just a part of human nature, and we should not find fault with Congressmen or Senators or with members of the Legislature, because we probably would do the same thing if we were in their positions.

We must, then, have an organization; not an organization of farmers alone, not an organization of owners of real estate alone, but it should be an organization if possible which will include every great organization within the State.

We have been approaching that in the State of Illinois from that point of view, and while we haven't gotten very far, we have made some advances, and we have the attention of the people of Illinois. There is an organization in the State of Illinois now which contains within it, representatives of every State-wide organization of any importance save one, and I suggest to you people in the study of this question and in any attempt to change your taxing system so as to get a fair taxing system, you will need such an organization, and you will get a fair taxing system, because you have such an organization and because you will not try it otherwise.

I don't suppose that the farm population in the State of Maryland is more than a fourth of the total. I doubt if it is a fourth of the total. You people, the people living on the

farms and interested in farms alone, can do nothing in this State. We are in the same position in the State of Illinois. If we wanted to we could not do it. We must combine with other people, and I think we ought to combine with other people to secure the co-operation in order that each class of people may be here, and in order that they may receive the consideration which is their due.

I am going to take up the subject of the general property tax which is your system of taxation in this State. I do not know the percentage of all of your taxation which come from a general property tax, but I do know that nearly all of them come from that source. You have certain State fees, perhaps certain other fees and licenses which go for certain purposes, but practically all of your taxes for most purposes come from your general property tax, and I am going to try and give you a diagnosis of the general property tax and the difficulties which we are having as a basis for a prescription afterwards; a general prescription, not one applying directly to your State, but leading you if you desire to do it, to make the application.

The general property tax has come down in this country from the earliest days. It is a survival of days which were totally different from what we have now. None of you people can remember the early days of this State exactly, as there is no one in my State who can remember the earliest days, but we know in theory, know from history what the situation was in those early days in your State as well as in my own. We know that at that time the ownership of property was a fair index of the ability of people to pay taxes. It was also a fair index of their duty to pay taxes. I say "fair." It was reasonably fair. It never was perfect, but it was reasonably fair in those days. At that time there was almost no tenancy, city or country. There was nothing, almost, in the way of intangible property anywhere. There were a few people living by wages, salaries, fees, and commissions. Practically every household owned its own property, and that property was farm property and they operated it. There was almost no concealment or evasion of property. There was little incentive to do it. Taxes under

those conditions could be applied fairly, and that system has come down to the present when conditions are wholly different.

You people know that in most of your cities the mapority of people don't even own the homes in which they live, and the majority of people are not operating the property with which they work—I mean are not operating property which they own. They are operating somebody else's property. You people know that with the development of corporations, with the development of many forms of money lending that we have come to the point where a tremendous proportion of the income of any State, any old State, at least, such as your own, is derived from dividends and interest, what we call intangible property, intangible property which has been taxed successfully nowhere as property. I shall revert to that subject in a moment.

Now, why should we believe under a system which worked 100 or 150 years ago in the State of Maryland that it would be suitable to the year 1929? It is partly inertia. If this change which has come in your State had come in a single year, people would have been shocked at what it does. But it has been getting gradually worse from year to year a little at a time. The increase has been coming gradually, slowly, but it has been coming, with the result that we have gradually gotten accustomed to it.

You have heard the story of the minister who was walking out one day for his health, and he came upon a boy who had caught an eel, and he was skinning that eel alive. The pastor said to the boy, "Son, don't you know it is a wicked thing to skin that poor animal alive the way you are doing? The boy replied, "That doesn't hurt him. He's used to it!"

We have the same thing in taxation. It is because this thing has been coming on gradually and we have been getting accustomed to it. An eel loses his skin frequently, and the boy was referring to that.

This subject which we are here discussing has been becoming worse gradually, with the result that we keep looking

forward with hope, believing that things will be better under our present system.

I don't want to be any killjoy. I don't want to bring you any bad news, but that is one of the things that we must look in the face. Can you under your present taxing system, and can we in the State of Illinois, or can any other State which depends primarily upon the general property tax or fund for the support of government expect that the burden will become less? There is a little difference of opinion on this subject. Let me point this out to you, that the number of people is increasing; it is increasing in your State, chiefly urban, and the number of purposes for which you collect taxes are increasing; the demands of the people for the purposes for which you are already collecting taxes are increasing, and they are expecting more efficient service than they have ever had before.

It is impossible under such conditions as these that taxes should not gradually increase. You may expect them to increase so long as you have this system. I am not going to tell you that they will increase rapidly as they have in the last few years, because that increase was largely due to the depreciated dollar as a result of world inflation and deflation only in part. But I am going to tell you you need not expect that taxes will be reduced, that we could ever go back to the old days, and I don't believe that you people would want to go back to the old days if you could. I am quite sure that none of you want any poorer roads than you have; I am quite sure that none of you want any poorer schools than you have; I am quite sure that in your State as in my own at least 70 per cent of all the taxes you pay go to one or the other of those purposes. Perhaps 70 per cent is a little high, but it is not much too high.

What shall we do in view of these problems getting a little more deeply into this general property tax? There have always been two important sources of income to the people in every State. One of them is property. Another is personal industry. Practically all income of every kind can be traced back to one or the other of those things, either

property, the ownership of property, or personal industry, and I have no hesitation in saying that even in Colonial days personal industry was more important than property in this respect. But at that time we had almost only one kind of property.

We have come along with our intangible property increasing with the amount of income which comes from wages, salaries, fees, and commissions increasing, and relatively with the amount that comes from ownership of property decreases, and that may be expected to continue. So that you have practically from a single class of property, real property, almost the whole burden when that class of property is producing a smaller and gradually decreasing proportion of the total income of the people of the State. If you will think about that for a while, I think you will agree that it is correct, and I believe the figures can be gotten to show that it is correct.

One hundred years ago there were almost no intangibles in your State. Today intangible property is producing as much income if not more than tangible property. One hundred years ago there was very little wages and salaries in your State. Today 57 per cent. of all of the income of your people is derived from wages and salaries alone, and this says nothing about fees and commissions, it says nothing about the labor and management of people such as you who are operating your own property.

If intangibles are constantly increasing in their proportion of total income, if wages and salaries are constantly increasing in their proportion of total income, there must be something that is decreasing. Well that something is property in the proportion of the total income which it is producing. How long can we afford to go on throwing the burden upon a class which is producing a smaller and smaller proportion of that total?

I now come to some things which I want to tell you, because there is a vast amount of information which is available on this subject, but for some reason which I have never been able to fathom there is almost no attention paid

to it. The United States Government publishes its statistics of income every year, and those statistics of income tell very plain stories. They are not interpreted in that column, but are plain enough for any man who will read them. And yet, very little attention has ever been paid to them.

Before I go into that, let me say this. I want you to understand the principle upon which I am standing. I say this—you are going to pay the taxes on property, and any property owner is going to pay the taxes on that property out of one or two sources, and there are only two. He is going to pay it either out of the income produced by that property, present or deferred, or he is going to pay it out of the capital. There is no other source. Of course, he may for a time carry it out of his own labor or the return for his own labor, but if he does he is really taking it out of capital.

Let's come back to this: The National Bureau of Economic Research, a very reputable organization in New York City, went into this subject a few years ago, and is still going into the subject. They published a volume which should be studied by every legislator in your State and every other State of the Union. It deals with the income of the people of the various States and the sources of the income. I am not going to recite you a lot of figures. I do want, though, to give you certain information as the basis for what I am going to say. In your own State and in the United States as a whole I gave you the figure 57 per cent. a few minutes ago as the percentage of all the income of the people of your State which is derived from wages and salaries alone. What is the rest of it? Well, you get around 12 or 14 per cent. from dividends and interest. You get 68½ per cent., about that on the average, from wages and salaries, dividends, and interest. That leaves how much? That leaves about 31½ per cent. for property, but it isn't property alone, because the labor and management of every man who is operating his own property is there, and that includes lawyers, doctors, and every man who works for fees or commissions.

Take up your classified telephone directory and see how many professions there are in a city like Baltimore. It includes you people, because I think you agree with me that every farmer is entitled to a return for his labor as well as the property which he owns—31 per cent. Now, you know perfectly well that a lawyer has to have a very good library, and he has to keep up with the law reports, he has to have certain other property and expenses. You know perfectly well that the average lawyer gets most of his income from his own personal industry and not from the property which he owns in connection with his profession. The same is true of any physician in spite of the medical books which he must own, in spite of the apparatus, and if he is a surgeon the large amount of property of that kind which he must own—he still gets by far the larger portion of his income from his own personal exertions and not from the property.

I am going to say that is true of you people. How many of you people (there may be some of you) are getting more? If you were to divide your income into two sources, one property and the other personal industry, how many of you people are getting more from the property than you'd be entitled to on a fair distribution of your personal industry? I venture to say there are very few. The person who owns a large amount of property and who can give only a relatively small proportion of the labor which that property requires may get considerably more from the property than from his own personal exertions. But the average farmer in Illinois, if he were given a fair return for his labor and management, would be given twice as much as he gets from his property, and I believe myself that that is true of the United States as a whole.

What does that all mean? It means this, that that 31½ per cent. I mentioned a while ago for your State, of all the income of all the people of your State which comes from the ownership of property, and remember that is both city and country, that 31½ per cent. is composed chiefly of labor

and management. And yet, we lay the burden of taxation practically upon that class of property.

What are the percentages of the State of Maryland? What are the percentages of the United States as a whole? I propose to give you a few. Not too many—I don't ask you to carry these in mind, because I assume that this will all be published, but you may wish to carry a few. I am going to take up first the United States. In the United States the average of all income of the people—this is not taking corporation income except as corporation income is distributed—is handled in exactly the same way here as the Federal Government handles personal income taxes of partnerships, because in case of partners personal income is not charged against the partnership, but charged against the partners. What is a corporation but a great partnership with a tremendous number of partners? Let us look at it from the point of view of the personal only. Somewhat less than 10 per cent. in the United States of all income comes from intangible property. Property, tangible property, including labor and management, produces about 36 per cent. The two together, about 45½ per cent.; wages and salaries alone about 55½ per cent.

Now let's take the case of the State of Maryland. What are the figures? You have more from intangibles than the United States. I mean, you have a greater percentage of your income from intangibles than the United States as a whole, about 12½ per cent., and that includes the bad year of 1921. You get more in proportion from property than is true of the United States as a whole, about 31½ per cent. as compared with 36½ per cent. in the United States as a whole. In the matter of wages and salaries you get somewhat more, about 56 per cent. from that source.

What percentage does property produce, the ownership of property, not the operation? The operation of that property should be accounted for on the side of personal industry, not on the side of property. It has been estimated by two very competent men in this country, one Professor John R. Commons of the University of Wisconsin, the other by the

authors of the series of books which came out two or three years ago, Poster and Ketchem of the Foundation for Economic Research in Massachusetts—that on the basis of the available figures, not more than 20 per cent. of all the income of all the people of the United States is derived solely from the ownership of property. Twenty per cent.—but that 20 per cent. is carrying nearly all of the State and local tax burden. There, ladies and gentlemen, is the difficulty in my State, and there is the difficulty in your State.

Now, your State has more intangibles, averages more intangibles than the United States. It averages more on wages and salaries than the United States. It averages less on property. Let's compare the kind of property. These men that I quote say 20 per cent. from all kinds of property. That includes tangible and intangible. Intangible property in the United States as a whole is equal to tangible property and what it produces. It is more than equal in your State. The people of your State are deriving more income every year from the ownership of intangible property than they are from the ownership of tangible property. I am not saying the operation of it now. Let's always keep these apart.

You know as well as I that we never have successfully taxed intangible property. You people aren't doing it. How much intangibles have you in the State of Maryland? That question can be answered with reasonable approach to accuracy. I don't know whether any of you ever heard the figures or not. If not, I am going to tell you, that you can capitalize the amount which is received. This is, of course, somewhat an estimate; it is not my estimate, it is the estimate of the National Bureau of Economical Research, and you people can get the book and see it.

If you capitalize at 5 per cent., or maybe we should say 6 per cent., the total amount derived from intangibles, bringing that as closely up to date as we can, the State of Maryland has today, or rather the people of the State of Maryland own today, and this does not include a single corporation owning such property, but the individuals making up the

population of the State of Maryland today, in the neighborhood of two and one-half billion dollars of intangibles. Now, you haven't that much tangible property in the State of Maryland.

How much taxes is that intangible property paying? I haven't the exact figures. You people began early. You were among the earliest of the States to try the low rate taxation of intangibles, and you have today a total rate per county and for State purposes of 45 cents on each one hundred dollars of intangible property. That practically applies only to stocks and bonds. Other kinds of intangible property are handled in different ways. You have a very complicated tax system, and I don't pretend to understand it all. I am coming to this: I do not think that your intangible property today is producing more than three million dollars a year—I mean in the way of taxes. How much is your tangible property having to pay? At least fifty-two million dollars a year, and that tangible property is producing less income than that intangible property.

There is part of your difficulty. In other words, you are letting some people off very easy; you are letting a lot of people off of all direct taxes, and the people who own their homes, who own the railroads, the people who own the manufacturing establishments, the people who own the business houses are paying the bill for them. That is the trouble with your taxation system and mine today.

You have a very excellent man in this city who is a very prominent member of the National Tax Association, whom I esteem very highly and whom I have often heard discuss this subject. He is a supporter of your low rate taxation of intangibles, chiefly, I think, because of the fact that it has brought into tax paying a very large number of people who would not otherwise be taxpayers. I agree that that is one element which should be considered.

But here is the point. If taxes are going to continue to increase on tangible property, the low rate taxation of intangibles is not going to save that tangible property from confiscatory rates. This word "confiscation" is an ugly

word, but it is a word that you people will have to face if you continue your taxing system as it is, long enough, exactly as some parts of the State of Illinois, especially our southern part of the State. We are more and more finding people there who are unwilling to pay taxes on property or to buy it in tax sales, so that we have not tax sales, but tax forfeiture in the State of Illinois.

I suspect I have used up most of my time, but I do want to refer to two or three things. What ought to be done? In order to remedy this situation, what ought to be done? I am coming back to one thing I said first. Organize and begin to study this subject as you never have studied it before, and don't forget to work with other people on this subject. It happens that you in this State have a special tax commission which is reporting to the State Legislature this year. I have a copy here. This book has just been published. I got a copy this morning, my first opportunity of seeing it. I have had no opportunity to go into it very carefully. I have read through the recommendations. I have no doubt it is an excellent piece of work, and I want to be very guarded in what I say about this, because I, too, am a member of a special State tax commission for the State of Illinois, and I want to be perfectly fair to your commission. I am led to ask if agriculture was represented on this commission?

PRESIDENT DAVIS: I didn't recognize any of the names.

MR. WATSON: I don't believe that any special tax commission in the State of Maryland can do the job it ought to do if agriculture isn't represented there (applause), because there is no class of property in any State that is suffering today from this system of taxation to which we have clung these many years as is agriculture.

What are the possibilities? I will have to enumerate them rapidly. You have heard various things proposed. The American Farm Bureau Federation in its annual meeting this year had a speaker from New England, a very excellent speaker who advocated the single tax. He is a single taxer, a follower of Henry George. Now don't mis-

understand me; I am not making sport of Henry George, and I am casting no slurs at Henry George. It happens that this same gentleman from New England who made the talk at Chicago a short time ago also is a member of a special State tax commission for the State of New Hampshire, and I got a copy of their report a day or two ago. I was rather surprised to see that in his own report he had made a minority report, he nowhere referred to the single tax by implication or otherwise.

Is the single tax a possible solution of our taxing problem? I say it is not. It might be if we could start out in a country when it is first settled and when all property is common there is no private property. But I am going to ask how you could start it in the State of Maryland to apply the single tax, that is, the tax upon land, bare land, without any improvements either to the land or in the way of structures built upon the land. How could you do it? Would the burden be put upon the government buying those values? If so, who'd pay for it? The people who sold their land to the government would pay for it. In other words, they would pay their own bill.

Furthermore, is the argument for the single tax the same in the city as in the country? I never yet have gotten a single taxer to answer that question, and I am going to ask just one question on that and leave it. What incentive would a tenant of the State (that is what he would be) under the single tax have to keep up the fertility of his soil? He wouldn't know how long he would occupy it. The only thing that he could transmit to his children would be the structures built upon that soil. It wouldn't matter about the soil. I think the effect of the single tax would be destructive to agriculture.

I can't go any further except to refer to the one thing that in my opinion has to be done, and there I take direct issue with your special tax commission which is reporting now to your General Assembly. Your special tax commission disapproves of an income tax.

Your own tax commission uses some rather strong language here. On page 5 of their report it says, "Our predecessors, the commission authorized by the Act of 1922, reported in favor of a radical change in our taxing system by the introduction of the State income tax instead of our present system of property taxes, which has been in force with diverse modifications ever since the adoption of the Constitution of 1776. We are opposed to any such innovation. We believe that a State income tax in Maryland would be wasteful, inefficient, and unwise." We will all agree that if the first two aren't right, the third is right. If it were wasteful and inefficient, it would be unwise. It isn't necessarily so, and when this commission says it would be wasteful and inefficient, it is an indictment of your Legislature, or your people, or both. I don't know which.

"An income tax mounted on the Federal system of progressive taxation would probably require constitutional amendment, and as such would be beyond the scope of the authority imposed in us by the General Assembly of 1927, where we were appointed to revise the statute and not the Constitution of the State. But apart from this more or less technical point we do not favor an income tax in this State."

What is the alternative? The alternative is an increasing proportion of taxation thrown upon property which is producing a little more than 10 per cent. of the income of the people of your State, because that is true of the property which pays the greater portion of your taxes. Or, it means the sales tax, and by the way, this body advocates a sales tax. They only refer to it, that is all.

Now can you people afford to go on much longer with a system which is taking more and more of your income, not only yours, but the income of the pepole living in the City of Baltimore and elsewhere, and which will continue to take a greater and greater proportion, and the end is confiscation? Maryland is not a high tax State measured in the proportion of your income which is applied for taxes in the State and locally; you don't stand lower than tenth among

the States, that is, if you begin with the lowest and run to the highest you are about the tenth, somewhere in there. You may have to go longer than some other States before you reach it. I think your State in many ways has been very well administered. I don't undertake to say in all ways. But if you go long enough this situation is going to be worse.

Now I come back to where I started. I want to say that you have got to look at this problem as a whole. You have got to study it with other people. You must have organization. I don't think I ever talk before the farmer but what I do not point out that this is an organization problem. You must have the information, you must take the long time point of view, you must make up your mind that the modifications will come slowly and will probably be better because they do come slowly, and you must be patient in educating the people of your State. I thank you (Applause.)

CHAIRMAN COHILL: In looking over this audience I think that nearly one-half of the audience are women. That speaks well for the future of the Maryland Farm Bureau. These women will go home and bring some more women, and then the men will have to come.

Illinois is pretty well represented on the platform here today, but Illinois is a wonderful, great big State, and is big also in the Farm Bureau. Mr. Winder, the Secretary here, nows who pays in the money, and he just told me that there were 55,000 families in Illinois that paid up in the American Farm Bureau Federation. We have also Hon. Charles Adkins, Member of the House of Representatives from Illinois and Member of the House Committee on Agriculture, and former Commissioner of Agriculture of Illinois, (Applause.)

ADDRESS

BY HON. CHARLES ADKINS

Mr. Chairman, Ladies and Gentlemen:

I noticed your Chairman referred to the women each time he has gotten up. I kind of agree with him. You know, I pretty nearly swore off going out and making speeches where the men are in charge. You take over in my State, when the women have a meeting and they call on me to make a speech I go, because they are always there, and they are ready to start on time.

This morning some parties called me up and wanted to have a little conference. I said, "All right. I have to make a speech at three o'clock, and I have forty minutes. I will have my secretary drive me over, and I will be back a little after five o'clock. The program starts at two." I was here at two. Well you know, when the program started, and it is now about twenty minutes to four, when I ought to wind up my speech.

We don't find that with the women. I want to talk to you girls a little. Some time back I had a lady from one of the largest towns in my district call me up in Mattoon, Illinois, and she said, "Can you come over and make a talk to us women at the Elks Club at two-thirty on a certain day?" I said I could, and she said to be there at two-thirty. Well, I was at the foot of the stairs talking with some fellows at two-thirty, and the committee man came rushing down and he said, 'Come up, it is two-thirty. The women are all seated and ready to go." I walked up and a lady took me by the arm and introduced me and then I went right on with my speech.

I like to attend women's meetings because I can just set my watch by them. Some of us have something else to do besides attend meetings, but when the women send for me and ask me to speak at three o'clock I know if I am late they will mark me off.

I am also glad to see the women taking hold, not only of political and social matters, but of farm matters. There

will be a few more of these laggard farmers when the women get at the helm. They will be getting their crops out on time and they will be Johnny-on-the-spot with a lot of things they are lagging behind with now. So I fully agree with the Chairman here that we have better times ahead because of the fact that the women have made up their minds, that if this thing is run as it should be, and if we meet the competition of all the rest of the world in production, that they have got to take a hand and wake these men up a little bit and make them a little more prompt in starting their meetings and a little more prompt about getting their crops out, etc.

Why the women are taking such an active part in our town, is surprising. A farmer over there recently died and his son came into town to make the funeral arrangements with the minister. He was asking him a good many things about his father, and finally he said, "What were your father's last words?"

The boy said, "He didn't have any. Ma was there." (Laughter.)

Ma, we are glad you are here; we are glad you are having the last word, and we are glad you are taking an interest in the Farm Bureau Federation, because you will not allow your personal ambition and your personal jealousies to come along here and hinder the great cause of agriculture as a good many of our farmers have done in times gone by. So we welcome you into the fold, and we are glad you are on hand.

Now, I don't know of any business in America that has received as much unfavorable advertising in the last ten years as agriculture, that any sensible man would put a dollar in or any intelligent boy would think about making it his life business. There never has been a time, I think, in the history of civilization when there were as many crocodile tears shed over men in one class of business as those engaged in agriculture, and with this continued picture placed before them, of no future for agriculture, that everybody is against agriculture, it has been

the means of a good many fellows letting go and getting out of the farm business who otherwise would have held on during the hard times perhaps and weathered the storm.

I remember a few years ago being up in the State of Iowa. Iowa, by the way, and our State are very closely related in this effort. They went into the co-operative grain business about the time we did, a quarter of a century ago. After their meeting was over a young man came to me and said, "I have come way down from Iowa to have a talk with you." He told me his situation. He said that his father was an extensive farmer and he had died and the boys kept on and operated the farm and accumulated some money for themselves. He said he bought a farm just before the war. He had a wife and four children. I don't know how big a farm he bought, but he said he went $38,000 in debt. He said, "When the war was on I made a good deal of money, but I didn't reduce my indebtedness. I built a couple of silos, modernized the home, fixed up the farm. My wife and I have been talking about selling out, taking our equity and going into town and getting into something else. Our children are going to high school; we are only a mile and a half out. What do you think about it?"

Of course, when I was a boy you know I started in as a cattle feeder and know the game all the way up. I said, "I think you'd be a fool to do a thing of that kind if you are making enough money during these hard times to pay your interest, to pay your taxes, and maintain a decent style of living, and your indebtedness is not such that it is embarrassing you any."

He said, "It is where I can carry it. I have a nice equity in my property."

Then I told him this story. I said that way back in the beginning of the hard times in '93, that lasted for quite a while when we sold corn for 20 and 22 cents a bushel, and oats for 12 and 14 cents, hogs for $2.75 a hundred, etc. I was a young man and had gotten hold of a couple of thousand dollars and bought a farm and a $7,500 out-

fit with which to operate it. A neighbor of mine sold out a blacksmith business for $6,000 and bought 200 acres of land and went $9,000 in debt. They were about to close him out when he came to me with his trouble and I went to my boss. He said, "They should not do that, should not crowd this man," and he went over to see him. He said, "You hang onto that if you can. We like to have you as a neighbor, and it will be the best thing you can have when you are seventy years old to take care of you in your old age, of any business that you are competent to handle. But if the worst comes to the worst come to me and I will take your farm off your hands and save your equity."

This fellow to whom he owed money was like the Dutchman. When he found he could get it he didn't want it, but if he couldn't get it he wanted it. So he let him give him a note for the interest, and they went along. This man went along, and I went along with my indebtedness. After a while the wheel turned and this fellow said, "We have these depressions in agriculture. I have been through it, and it will come back again, but you boys will get along all right." Now this man is 65 years old and he has this farm paid for. He modernized the home for his boy, and the boy got married. He built a silo, built a modern corncrib, put on phosphate and grew legumes on his farm, built it up, and when he died he left his son and the mother the 200 acres of land and $14,000 in Liberty Bonds and $6,000. in the bank account. I said that I knew he got more pleasure out of that than any other business he could have been in the last ten years of his life. So I said, "Young man, I have sent ten children through school and I know that there is no business that I could have gone into without a trade or profession where I could have sent those children through school and spent twenty years of my time in public life in addition to my business, which you all know is costly, and still have a roof over my head and a dollar-and-a-half I haven't spent yet." I don't know of any business that I could have gone into

and raised a family of ten children and sent them through school and get as much out of life, starting out without anything, as on a farm. So I said that we have fallen into a way of wanting everything to come easy and have a jolly good time. In other words, I said, a good many boys now want to start in where Dad left off, and they generally wind up where he started. I told him he'd better go back home, he and his wife, and make up their minds that they better go through a little fire and smoke for a while, hang onto that farm if it takes ten years to get the tide turned, because things can't always go this way, and it will be the best thing he will have.

I know men in my city, good men, who have been in industry all their lives, who have been honest, who have been good workers, and at the age of 67 and 68 they are going to work with their dinner buckets every morning, and the best thing they have been able to do is to bring their families up and perhaps have a modest home in the city. So I have said, "Let's get away from lots of this. Agriculture is having a hard time, harder time than anybody else getting back, but we will get back some of these days."

What is wrong with agriculture anyhow? A good many things were wrong in the past that we have been able to right ourselves. Twenty-six years ago we decided, out in the middle-west, that we were not getting quite a fair deal in the grain business. In other words, we thought we were paying too much for the local service of handling our grain, taking it from the wagons and putting it into cars and sending it away, and we organized the elevator company. Now, that was a long story, but anyhow, we made it a success and we are going along, those who had any business sense. You can't hope to get any good out of a community that hasn't local leadership that is sensible enough to conduct a thing in a business-like way.

We solved the local problem through co-operation. Take a local institution that has been 26 years in our business. We are as strong as any bank in our community and have

$46,000 excess and give the benefit of what it takes to run the business on a co-operative basis, to our patrons. That is all very good. In those days we couldn't get a newspaper even to say a kind word for us. They all looked at us as semi-socialists. But we went along with it, and we demonstrated finally that this was a sane, safe, economic proposition, and now every politician in the country yells his head off for co-operation. Every newspaper in the country talks co-operation. Why, we had to go out in those days, I remember, and finance a little newspaper to get the co-operative information out to our people. There wasn't an agricultural paper nor there wasn't a metropolitan paper that would say anything for us except where one failed, and then they headlined that, of course.

But all that is changed. The farmer himself went out and demonstrated that co-operation was a practical, sound, economic proposition, as a matter of local service. That is as far as he has demonstrated its efficiency. But he has demonstrated that, not only in the grain business but in many other lines.

When the great World War came they began to look around, not only in this country, but in all the rest of the world, to see if there was some locality in the world where they could support not only their own people, but where they could find a large surplus, in order to keep the armies in France fed. It has always been well known that you can't win a war on an empty stomach. When the inventory was taken it was found that the great Mississippi Valley was the place that would meet the situation. They recognized the fact that the farmers who produced various crops in small amounts didn't have a surplus big enough to meet that situation, and it would be necessary for them to look to a part of the country that produced cattle and hogs in droves, that produced wheat by the millions of bushels in order that they might feed their own people and save the day in the battlefields of the old world. And they met the situation.

Then it was necessary for the Government of the United States to look to some agency to stimulate the producers in that part of the country, especially to greater activity in order that they might meet that situation. In looking around, of all the various agencies that were the most representative of agriculture, they looked to the Farm Bureau. They not only stimulated the organization of farm bureaus, which was made up of the leading fellows in the community—they went out and stimulated it, especially the various staple products that were necessary to be had and produced in increased amounts.

I remember I was Commissioner of Agriculture at that time and was over in the western part of our State. The biggest part of our feeding is done between the two rivers, Illinois and Mississippi, where we have very fine country, and I saw a large number of the big blue grass pastures turned under, and I said to my assistant when I got home, "It will take ten years to readjust agriculture. It is out of balance. When this war ends they will have to meet this situation."

Well, we came along and got into the war and the first thing we knew the great consuming centers and the metropolitan press put up a great fuss about what the price of wheat might be some time. You know, you farmers, that you had better let the law of supply and demand govern, that you mustn't interfere with it, that you can't interfere with it. But let's see what happened. Why, you know, when we got into the war we not only stimulated agriculture but we stimulated everything else, and it was not only a question of what the food cost or what the materials of war cost, but it was to get them. We were all sailing along pretty good, as you remember, and then the consuming centers and the metropolitan press began to holler about what danger there was in the price of bread.

I am not going into that. But at any rate, they did think it was necessary to interfere with the law of supply and demand and just sort of put a block on the price of wheat and on the price of flour. And they did it. They

did interfere with the law of supply and demand. We went along and we met that situation.

Then again in 1919—I am not going into that in detail, but I can furnish the record if anybody questions it. After the boys got back and we found an opening to dispose of some of our surplus we were going along again pretty well, when the great consuming centers of the country rose up in alarm about the cost of living, and you remember that the railroad men of the country were demanding higher wages or would tie up the transportation lines unless the cost of living was reduced.

I remember at that time of giving out a statement as Director of Agriculture what the country might depend on, not anticipating that the Government would again interfere with the law of supply and demand, but it did. I haven't the time to go into the detail of that. Come up some night when I have plenty of time, and some of you women get up a meeting so you will have it on time, and I will tell you all about how it happened. But at any rate, the Government interfered again and said, "Here, we will have to deflate you fellows," and they did. It so happened that in deflating the whole country the farmer got it in the neck worse than anybody else. We will not enter into the cause of that. But what I want to get to is the legislative feature as it affects the farmer generally, because I know you people would be disappointed if I didn't say something about it.

Finally, when 1921 came along, when the Sixty-Seventh Congress convened, they found agriculture in a most deplorable situation. They found the unfair economic position that you farmers in Maryland, Illinois, and everywhere else were in compared to the rest of the fellows. In other words, you couldn't make a fair trade with a commodity you produced for the commodity the other fellow produced.

Then what happened? Why, the American Farm Bureau Federation, the most representative of any farm organizations in the country, because it represents men en-

gaged in all the different agricultural activities, had their representatives come to Congress with 26 laws that they thought would meet the situation, and through the operation of those laws agriculture would occupy about the same relative economic position as other activities. We felt good over that, for when the representatives of the American Farm Bureau Federation made the report to the membership they set out the fact that the 26 laws placed on the statute books of the nation meant more to American agriculture than all the laws that had been passed since the adoption of the Federal Constitution.

Congress recognized the unfair position that agriculture was left in, recognized the fact that it was necessary to do something special, to assist agriculture, because of the fact that this was the only case in which the Federal Government in time of stress put on the restraining hand and refrained from allowing the law of supply and demand to function as it had under all circumstances.

We started off. I am not going into that, but I could tell you a beautiful story about how the vote was on those various laws from your great consuming centers, but I haven't time to do that.

The emergency tariff law was finally written into your tariff law, and the various other laws, and after they got to functioning we found that they functioned fairly well and were of very material assistance in bringing up to the proper economic level all your commodities except what? Those that we produced and had an exportable surplus of. The biggest handicap was on wheat, because we export a larger percentage of wheat than any other commodity we produce except cotton. We produce in round figures about 25%—that is export in round figures about 25 or 30 per cent of our wheat, either as wheat or flour, and about 60 per cent of our cotton.

Then the question arose as to what was the remedy for agriculture, our great staple commodities of which we produced an exportable surplus; how we should meet that situation in order that it may not be competing with the

cheap land and cheap labor of other countries. If our present theory of the tariff is correct, we are sending our surplus wheat and our surplus cotton, etc., across the sea, and that sells in the open market in competition with all other lands, and that automatically in most cases becomes the domestic price for those particular commodities. Then the question arose as to how we were going to meet that situation. First of all, the country was not convinced that there was an agricultural problem. Everybody seems to be convinced that there is one now. Everybody seems to be convinced that the exportable surplus is the cause of the farmer's troubles. Everybody has agreed, or practically so, that there should be a Federal Farm Board to administer the disposition of this surplus in such a way that the farmer would at least get the benefit of the domestic market plus the tariff as we presume most of our other activities enjoy. Everybody seems to agree that it would be necessary to have a large Federal loan to finance the handling of this exportable surplus that is talked about so much.

Up to that point there is no material disagreement as to what shall be done or how it shall be done. But here comes the interesting part of it. The farmers and Congress after six or seven years of debate decided that that program should be carried out. But they recognized this fact, that there would inevitably be losses to be met in the handling of the surpluses every season except when something would occur on the producing or consuming side that made an abnormal shortage and made rising world markets. In those instances there would be no loss. But in those conditions we wouldn't be very likely to have our Board operating. In other words, take the Agricultural Department now. They make studies of price trends and make a prediction whether the trend will be upward or downward for the future. Well, some fellow says that is old stuff; there is no dependence on that. Well now, let's see if there is. We generally rely on our weather bureau reports. We do it in transportation and a good many other

things, for their predictions are thirty-six hours ahead of time. Statistics show that the Weather Bureau reports are correct 86 times out of 100. In other words, 86 per cent of the time they are correct in their prediction. That is reliable enough so that we may depend on it most times.

Statistics also show, and I got this from the former Chief of the Bureau of Agricultural Economics, and I presume he knows what he is talking about, that the department in their prediction of price trends and future price trends, is correct 89 times out of 100. So that we can look on that as being fairly reliable. So with these means of predicting future price trends that this Board which has been so much talked about would have access to, the chances are we would very seldom be operating on our surplus when the future trend of prices was upward. We wouldn't be operating, necessarily we wouldn't have to. But it is only when they are going down that they are operating.

We have gone to the President of the United States twice with the proposition that that sort of program be carried out; the price trends would be anticipated. the size of the surplus anticipated, and the amount of loss anticipated, and that spread out over the entire production in what was known as the equalization fee. And that seemed to be the fly in the ointment. That is what they tell us is unconstitutional and unholy and all that sort of stuff, but that we must go and organize a co-operative society, encourage co-operation, loan money, and let them take it over and handle this surplus, and everybody is going to be happy.

As I said before, co-operation as a service organization has done a great deal for reducing the cost of service in handling our commodities. There is no country in the world that get their crops from the field to the processer as cheaply as the marketing system in America. Very largely the cost has been kept down through the influence of co-operatives at home. But co-operation won't solve this problem. The oldest and most successful co-operative

society known in the world is the English Co-operative Wholesale Society of Great Britain. George W. Hinman, (and I think every man that knows anything about George Hinman will admit that he was not a man who would go out and give an extravagant statement, but when he gave an opinion on an economic question it was the result of proper investigation before he wrote his story) used to run the Chicago Inter-Ocean, and when that was closed out he was with the Chicago Tribune for many years. There was so much talk about co-operation, about the success of it, and about its ability to take and cure the farmer's ills, that he went over and studied it in Great Britain, perhaps in a way that most men wouldn't. In looking up the history he gave a report of the audit, April 1, 1922, of that organization.

They started way back in 1844. They were consumers. After a while they decided that the tea drinkers in England were paying too much for their tea, and they decided that the tea farmers of Ceylon were charging too much for raising this tea. They decided they would grow their own, so they bought twenty tea plantations in Ceylon. They grew the tea, picked it, dried it, blended it, boxed it, and shipped it to their own country, sent it through their own distributing houses to their own stockholders and laid it on their table without the intervention of any outside agency.

Then they decided the farmers of Great Britain were charging too much for the farm commodities that they sold them to be processed for their consumers, so they bought twelve estates in Great Britain and controlled the commodity from the barnyard or from the soil to the consumer's table. Every item of processing, and every item of distribution, this concern controlled. They built up an annual business of $500,000,000. They laid by a surplus of $15,000,000 and everything was going fine, but when the slump hit them it hit just as hard as it hit you and me. When they made their audit in 1922, on April 1st, they found that they had lost $8,000,000 of the $15,000,000 sur-

plus, and that these 32 farms that they owned where they controlled the commodity from the soil to the consumer's table through all its processing aids and distributing agencies, had lost $500,000.

So that co-operation worked out to perfection itself, is not the cure for a great agricultural depression such as we have gone through now. It is a mighty good help, but of itself has no control over the price of the commodity.

You talk about co-operative agencies. We have a good many things to contend with that they don't have to contend with in the old world. First of all, we have a very wide span of territory. I hear people talk about Denmark. Why, I made an hour-and-a-half speech on Denmark and America, comparing the two, and I'd like to tell you the story, but I will just briefly refer to it.

When we talk about a co-operative agency, a stabilization corporation in this country backed by the Government, big enough to control the surplus wheat of the country, big enough to handle the surplus cotton of the country, or big enough to handle any of the surpluses of any of our staple crops, taking it over and running it without the show blowing up, I want to say that if we do that we will have done something that no people have been able to do. Take in 1919, when the world was going crazy on getting rich and we were all talking about co-operation, Denmark decided to organize a national co-operative wholesale potato export association, and they did. They went out and did a land-office business. Their business was $2,823,000, and they went on, and in 1921 they went broke. When the crash came, Denmark with all her co-operative experience, couldn't do it.

They had abandoned their former custom. Their former custom had been to go back and develop the local unit and work up, but they went to the top. They had over 300 co-operative potato associations organized immediately with 25,000 members. They did the same thing in 1889. They organized a national export butter association, to handle all the butter in Denmark that was exported, and they

export most of it. That is the reason those rascals succeed so well. They export their butter and import soy beans from China and make oleo and spread that on their bread!

We have to have a good, stiff tariff on butter. They'd starve us out if we'd allow them to. They organized this nation-wide export butter association. Now mind you, 90 per cent of the dairy products of Denmark are processed through the co-operative creameries, and yet they dragged along, and dragged along until 1909 when they went out of business. The size of it was beyond the business comprehension of any trained co-operator that they had. They din't have any way of maintaining the losses, and the result of it was that Denmark with all her experience, couldn't keep the boat afloat against competitive business with a nation-wide commodity export co-operative organization. You can get that in a bulletin issued in 1924 by the Department of Agriculture. They got this information. It is not street-corner gossip, but after due investigation they got it and put it out as a public Government document.

Then we come along. We can't begin to compare the volume of business of a nation-wide co-operative of little Denmark with any co-operative organization in the United States. Why, just think of it. We couldn't think about it. Denmark has only about as many people in it as Cook County, Illinois. Maybe some of you don't know it, but Cook County, Illinois has Chicago in it! Denmark is only about two-thirds the size of the State of Illinois. The people all belong to one church practically. They don't have a lot of church affairs to look after like we do sometimes here in the communities, and they all are one nationality; they are all Danes. They haven't any race problem that enters into it like it does here in different localities. They have everything as propitious and favorable for successful co-operation as can be, and then let me remind you of another thing.

The position that I have taken, the position that the farm leaders have taken is that this stabilization corpora-

tion, or whatever you might call it, that we propose to provide for under the supervision of this Board to handle your exportable surplus of your farm commodities, can't stay on the map, at least, for the first four or five or ten years of its existence, unless some means is provided to take care of these losses. Why is it supposed that we can perform any miracles here that have never been worked out practically by the best minds of the different countries that have had long years of experience in co-operative effort? As some people said, "Why doesn't Congress go ahead and pass a bill here?" It is amusing to me to see the crocodile tears that are shed by some of the eastern metropolitan papers that have been so persistent against farm legislation to have a law passed just now at this present session instead of calling an extra session for that.

Well, now, I don't know how you farmers from Maryland feel, but our farmers will not shed any crocodile tears over their Congressman if he does have to sweat a little down here in April, May, June and July, enacting a law while he is out planting a crop. We don't think that is going to hurt Mr. Congressman any. And another thing; we haven't had a single suggestion, and I am not saying this disrespectfully, from the present administration as to how he is going to take care of these losses just referred to. I don't believe anybody thinks that we can enter into competition with a business system that we have been nearly three-quarters of a century building up, one of the most efficient in the world, that has been built up by the shrewdest business minds in the country, where only the survival of the fittest has come forward—that we can go out and put this thing on its feet in the competitive field by good merchandising unless we do protect it against the losses that are inevitable.

Now, no suggestion has come from this administration, and I stated on the floor of the House January 3rd, that I was opposed to making any effort, that the incoming administration in my judgment certainly had something constructive to suggest as to how to meet this all-important

problem that is occupying the minds not only of the producers, but of the consumer as well.

The consuming public has just as much interest in this as the producer—not now, but in the long run will have. I have no patience with the fellow who comes around and suggests that we ought to limit production and all that sort of thing. First of all, he has a pipe dream and he is talking about it. Along there during the war, you know, we put forth every effort to produce every bushel of wheat we could and often times in our history we produced a billion bushels of wheat. That is because we had the weatherman with us. We can't control the weather. We can't control the insect pests or anything of that sort. But suppose we could control production in the country. I don't know of anything that would be as disastrous to the great consuming centers as the ability to do that. We, in round figures, consume about 600,000,000 bushels of wheat in this country a year, and we know about how many acres that grows on. We know about what the average number of bushels per acre is.

Suppose that we get out our blue print, as some people think that we might, for the next year's crop, and it is scaled down to the exact number of acres to produce the exact amount of bushels that would do us. Then suppose some weather condition arrives or insect pests come along and reduces that very materially. Who is going to suffer? Not the well-to-do citizen; he can buy it at the price; but it is the poor people in the great consuming centers that will suffer, and the thing that is their salvation is the present speculative agencies that carry over from time to time that tide them over. There is no surplus over the last 25 years but has been carried by somebody, and he is supposed to have been well paid to take care of just such contingencies. So that I don't think any man who advocates that has considered the effect it would have on a very large part of our consuming public when he even suggests such a proposition.

Some fellow comes along and says, "Oh, we want cor-

poration farming. We want to have large bodies of land controlled by experts and run as you run a corporation." Well, God forbid the day. In looking over the history of little Denmark, for instance, what is the history of it way back 100 years ago? Before we began to develop this country, Argentine, Australia and India into great wheat producing countries, Denmark was very prosperous in producing wheat, and had a good market. What was the result of it?—after we began to edge in and to break up more and more acres, with cheaper land and cheaper labor and more efficient means of production,—what happened? They began to crowd her to the wall. They were exhausting their soil, and the little farmers began to be sold out and were absorbed by other men, perhaps not men who were farmers, but they absorbed this land. Finally, 10 per cent of the people owned all the land in Denmark that they preach so much about just now.

But the proposition was, how were they going to compete with this country in the production of wheat, and compete with India, compete with Australia, compete with South America? They couldn't do it. Then they had to look around and find something that they could compete with. They found that Great Britain with her 45,000,000 people was only producing bacon, eggs, and dairy products enough to feed about 15,000,000. They saw an opportunity right at their back door. They had no mineral resources, so they had to be agriculturists, and farm whether they liked it or not.

They passed oppressive laws to get people to go out on the land, but they wouldn't go. Why? Take the incentive away from a man, and I don't care whether he is on a farm or in a factory or where he is, take away the prospect of finally owning a home of his own, building up a nice home, and you take away the incentive for him to pursue that particular occupation. That is the thing we want to encourage. One of the biggest things I ever knew General Wood to say was that what we wanted to encourage was a nation of home owners, because as our population

increases the dangers of uprisings increase, and a man will go out and shoulder a gun and defend his own home, but he won't do it to defend a boarding house.

These fellows said, "No, we will not go out and work on your land. We have no hope of ever possessing the soil." Well, you know you can't legislate a man out on a Maryland farm and make him work; you have got to offer him an inducement to go out there. The days of slavery have gone by. Then what did they have to do? The large landowners and the government had to go to work and establish elementary schools, high schools, colleges—I think they have 28 or 29 agricultural schools besides their university at Copenhagen. They educated their people, and the big land owners and the government worked out a scheme to sell this land to the people on such terms as they could eventually pay for. What was the result of that ? They had to offer some inducement to the man to go out there and live the independent life. I think their farms average forty acres in size. These thrifty fellows went out and paid some down and paid along, less rent than they used to have to pay, and today 93 people out of overy 100 in Denmark own their own homes and their own farms, and they make more money per capita than any other race of people in Europe.

That was what happened to them. Try to start your corporation farming in this country, have your vast estates operated, and who is going to go out and operate them for you? You will have the disappointed, the crushed, and the unambitious until you make a condition of profit sharing or something of that sort that the young man can see it will be worth while for him to go out there, and if you don't make a condition of that kind you aren't going to get any worth while fellow out there. Your production will go down and the result will be that the great consuming centers will be crying for relief in the course of eight or ten years if this situation goes on in place of the farming community.

I say they have as large an interest in this as we have. I remember one of my colleagues in New England, a farmer, prided himself on being the possessor of a farm that had been in the family since 1802. He said, "When you men develop those great fields out there in the middle-west you put our people out of business. Many of them moved into town off fairly good farms, so the rest of us went into the dairy and chicken business and we are buying your stuff to feed them." He said, "We want to go into a scheme here that is going to make us pay more for these commodities that we are buying to feed our dairy cows and chickens and stuff like that."

I said, "Is that so? Let me tell you something, Brother. You ought to be the very fellow in favor of that. Our people don't like to milk cows in my district, and I think we have as rich land as there is in America, right in the heart of the corn belt, and most fellows would as soon be kicked as sit down and milk a cow. But this long grind that they have gone through, of being unable to meet their bills, and they had to have something to meet the grocery bill, made them realize that the man who had some dairy cattle was able to pay his bills."

The dairyman hasn't fared badly. When we raised the tariff from 8 to 12 cents on butter it kept the Danish butter from coming in and butter from other countries, and the dairyman has gone along pretty well. The other farmer has seen it, and in one of my counties, one of the most conspicuous counties in the state for producing high-class, high-yielding Jersey cows, they are adding cows just as fast as they can buy them in order to have something to sell, some cash commodities to sell with which to pay the grocery bill.

I said that the proposition will be here. I think this will right itself some time, but you men who should be feeding cattle and hogs, are producing acres of corn and wheat and other stuff out in our country, something you like to do much better than milk cows. We have gotten up now to the point where we are producing pretty nearly all the dairy products we can consume. Ten years from now perhaps this

man will be down here hollering his head off that we have a surplus of dairy products.

Here is another thing you will find out at Decatur. We load thermos bottles with milk and send them to New York, and we have the cows out in our country, we have got the oats and the middlings and the hay that they have to buy here. We have them all there together, and we can put the man out of business here in the East. He will have to go out of the dairy business. That is what will happen. In other words, we will have agriculture out of balance again. And why not, when we have all agreed as to what is wrong, why not come around, work out a policy that is going ultimately to work out to the good of all sections of the country, to the consumer as well as the producer, keep every man on the job? Our crop last year wasn't very good in quality; to illustrate that and to show you where the consumer gets off at this point, and I keep pretty close tab on it, that crop went to market at an average of from 55 to 60 cents a bushel in my district, which is a very large corn district, and produces a large amount of corn.

Now, some farmers were hard pressed, and they will always be in the majority because you usually find young men getting into the farm game unless they make it so undesirable nobody wants it. Young men start in either buying farm equipment as a tenant, or buying a farm and going in debt for it, and that class of men have to liquidate pretty early in the game. They are a very large majority in my part of the country now. All that class of farmers sold their corn from 55 to 60 cents a bushel, their necessities were such, which was seven or eight cents less than it cost them to produce it.

Did the consumer get any benefit from that? Let's see if he did. When corn went up from 90 to 95 cents a bushel at those local stations, who was benefitted? Mr. Consumer had to come across all right when he bought it at that price. The only man who was benefitted was the small number of farmers that were able to hold their crops, and there are very few of them out in this country right now, and the speculator was well enough financed and was willing to

take a chance on the market. The producer on one end got it, and the consumer got it on the other end.

Both consumer and producer would have been very much better off if we had had a corporation such as was provided for in the McNary-Haugen bill. That would have stabilized the price of corn from 70 to 75 cents a bushel. The hard pressed farmer would not have been compelled to sell at a low price, and the consuming public wouldn't have had to pay the extra twenty cents a bushel for it when it went up to 90 and 95 cents a bushel at the local station.

That sort of philosophy will work out with any staple farm commodity if the theory of stabilization as advocated and now practically agreed on by everybody is possible through legislation of that kind.

I expect you people feel a little like the fellow that was sentenced to the penitentiary for five years for a trivial offense. The Judge asked him what he had to say about it, and the man said, "I think you are darn liberal with other people's time!" I expect you people feel that as long as you have sat here this long that I have been pretty liberal with your time. I beg your pardon for talking longer than I expected to. But I think the American people now recognize the fact that this is not just a few farmers over in the middle-west who are crabbing and trying to grab some selfish advantage for themselves. This is not only a national but an international question that concerns everybody and that ought to be solved in the interests of all. We can't afford, ladies and gentlemen, to have a policy here continued for another ten years that is going to drive the balance of the good blood that we have always had to fall back on in American farm life, into your industries away from the farms. We can't afford to have such a policy, and I think the sensible people in all our great consuming centers are beginning to appreciate that fact, and I think that when the next administration convenes—I am not a prophet and I am not the boss down there, I am just a small potato, but I speak my piece all the same—I think when the next special session is called, which I think will be soon—you can't hope to work out as important a problem as this, and we haven't

got anything new that we have been disagreeing on here for years. We are on a new head here, and we want a new outfit to handle this proposition, and with the proposition talked up as much as it was during the last campaign, and made the leading issue through our part of the country, I think that when we get the new administration in we are going to have at least something interesting to suggest in the interest of the solution of this problem. (Applause.)

I think another thing that we will find is that men and women regardless of political affiliation and regardless of locality, realizing the importance of this proposition and what it means to our civilization, will be in a more conciliatory mood to join hands here and try to work out a constructive, permanent program for agriculture. (Applause).

CHAIRMAN COHILL: Ladies and Gentlemen, Mr. Watson and Congressman Adkins have come here at considerable inconvenience to themselves, and I think we ought to give them a vote of thanks. All in favor say "aye." (Carried).

I think we will dispense with the singing this time and sing more when we get home. We have with us our National Secretary, Mr. M. S. Winder, who is going to tell us, "Why the Farm Bureau." (Applause).

"WHY THE FARM BUREAU"

BY M. S. WINDER

My Friends of the Maryland Federation:

I do not propose to tell you that the meeting has concluded according to schedule, although my watch tells me that my speech is just finished. From the fact that you started late and that you have had two splendid addresses, I am going to proceed to tell you in as few sentences as possible why there is a field for a Farm Bureau.

We people here in America enjoy at the present time the highest standard of living that the people of any nation have ever enjoyed. This condition has come about not by accident or chance, but by careful design and deliberate planning.

Away back in years past the farm people were a great majority of the people of this country. Now we are less than a third of the population, and in that time manufacturing was confined principally to New England where the soil is inclined to be barren and rocky, and yet, where water power is quite abundant. There was the first attempt made at manufacturing, and the people there engaged in their various manufacturing enterprises with a fair degree of success until they discovered that people who lived in Europe could produce the same product that they could at a less cost, could ship it across the Atlantic Ocean to America, and sell it for a price less than the New England manufacturer could make his goods for.

A standard of living was at stake. Those people might have said, "We will be content with an inferior standard of living, and we will meet that competition by producing articles which can be sold for a price equal to the European price plus the cost of transportation." But they couldn't do that and continue to enjoy the standard of living that other people here in this new and prosperous land enjoyed. So they joined together in an association.

You know whenever we are in distress we find that the thing to do is organize, and those peoeple engaged in their various small manufacturing enterprises united their efforts to attempt to solve their problem, and so up in New England we have the Danbury Hatters Association, organized in an effort to solve their problem by reducing the cost of production, and they had a fair degree of success.

But the problem still remained unsolved. Then they tried through joint effort to reduce the cost of distribution, and in that they had a fair degree of success. Then they turned back to that principle of government which had been established here, that this is a government for the people and of the people, and they said, "If we are going to continue in this worthy enterprise, the Government must give us support and protection." So they came to the seat of Government. That was in the days when Alexander Hamilton was Secretary of the Treasury, a financial genius. They said to him, "This is our problem. What shall we do about it?"

Alexander Hamilton didn't say to them as some of our politicians have said to the farmers in these past years, "Go home and work out your problem yourselves." He said, "We will give you a protective tariff that will equalize for you the advantage that is obtained by the manufacturers of Europe in that they have cheap materials and cheap labor."

Well, there were many wise men in those days who said, "This is a violation of the fundamentals of economics, because you propose to interfere with the law of supply and demand." But those objections were of no avail, and immediately there was enacted a protective act for the benefit of those makers of hats up in Danbury and then for the makers of every other conceivable manufactured article that needed a measure of protection.

When I was just a boy I fell from grace and went into politics, and because I believed in the principle of protection, I have always adhered to the party which has advocated protection. I don't know how much longer my adherence will continue, because my patience has been sorely taxed in all these years when they failed to give me and my people a square deal.

Believing in that principle of protection, I believe that those manufacturers were entitled to Governmental protection through a tariff. I believe that when labor fell into distressing times, felt a need of protection for their benefit, that they were entitled to all of the legislation that was given whereby their standard of living has been secured. I believe the restricted immigration act which again interfered with the law of supply and demand is justified and right, because it helps to give to the laboring people of America an assurance of a continued enjoyment of this American standard of living which cannot be had, it seems, without protective measures.

So I could go on naming each group in our society who have been made the beneficiaries of our protective system, and if you will follow it down to matters of State legislation you will find that even the professions have in a very generous measure been benefitted by protective legislation.

We farm folks alone failed to preach the need for it. It is true that we were given high protective tariffs on some products, principally those of which we had exportable surpluses where the tariff could be of no possible benefit to us. We were given reasonable protective tariffs on some other products. But in the main, we have failed to recognize that this principle of protection must be made to apply.

We have been told that the distress of agriculture has come about by reason of the fact that we have had a great world war, and that there has been a depreciation following that war. I believe that if we will study the causes carefully and thoughtfully we must conclude that our present predicament was inevitable regardless of war. It happened by reason of the war, but it would have come without fail whether there had been a war or not, simply from the fact that you cannot give by artificial means prosperity to each other group of our body politic and leave out one of the major groups and expect that great major group to continue to enjoy prosperity. If protection is sound policy for the rest, then it surely must be sound policy for those engaged in agriculture.

Up until some ten or twelve years ago we had not felt the need of an agricultural organization dealing specifically with economic problems. We have had some splendid agricultural organizations which have helped to develop high ideals in country life, that have helped to develop the spiritual side of life for country folks; we have had organizations that have developed rural consciousness, but never before have we felt the need of an organization devoting its time and its effort specifically to the task of working out the economic problems.

When each other group in our society felt distress they joined together to work out the problem confronting them. And so with the farm people. When they fell into evil ways the logical and sensible thing to do was to organize in an effort to solve the problem which confronted them, and that is the reason for the Farm Bureau movement in America, and has been the whole purpose back of it, that through co-operative effort, through joint action the farmers of the

Pacific Coast, the farmers of the Atlantic Seaboard, of the great middle-west and of the mountain States, might all join together in an effort to work out this great problem with which we are confronted and upon which so much is dependent that has to do with the welfare and the prosperity of American people.

This problem is going to be solved because we are learning to work together, not because those of us who are in the dairy business, and I happen to be in that business myself, say that for the time being we are prosperous and so we are not concerned in the problems of the corn and the wheat and the hay grower, but we must recognize we who are in the dairy business that today we are within less than 2 per cent of the saturation point, and that it would be a very simple matter to increase production to the point where we produce a surplus of dairy products, and then with our modern transportation means it would be an easy matter to ship milk from the middle-west into Baltimore or Washington or Boston markets. We have seen these things done, and we know they can be done.

Then it follows that the producers of agricultural products have a common problem even though for the time being some of us may be enjoying because of the production of a special product, a slight advantage and a reasonable degree of prosperity.

It has been said repeatedly that co-operative marketing holds the key to the solution of the agricultural problem. I believe that co-operative marketing will be a potential influence in working out the problem, but I do not believe that co-operative marketing alone can do it. I say that from the fact that in too many cases those who will not join co-operative organizations are the means of bringing about their destruction. We have been disposed to think of the non-co-operator as a selfish person who stays out of the organization in the hope of getting an increased gain. Well, that is true. But the man in the co-operative association is also a selfish person who goes in not because of a high ideal, although I hope he may be in part actuated by high ideals, but he goes in with the thought of building a permanent agri-

cultural industry. The non-co-operator is ignorantly selfish; the co-operator is intelligently selfish, and if you will stop to think about the contrast between those two conditions, you must realize that through intelligently selfish co-operation must come our hope of solving this problem.

Last May I had occasion to go into Kentucky. I spent several days there with the leaders of their various farm organizations, particularly the leaders of the great tobacco co-operatives. Just a little more than a year ago the Burleigh Association had 108,000 members, the biggest tobacco co-operative in the world at that time. Today that association has suspended business, not because of mismanagement, not because of debt, but because of the man on the outside who brought about the ruin of that institution.

The Burleigh Association had undertaken to improve the condition of the tobacco growers of Kentucky and adjoining States. In a period of six years time it more than doubled the average net price to the producer over the preceding six years time. When it suspended business it had assets of over $7,000,000. It had been well managed. There had been, of course, some mistakes in operation, but in the main, it had been well managed. The members of the Association said that it had saved their section from bankruptcy and that they themselves had been saved from financial ruin. But men who refused to join the organization got the same price for tobacco that members of the association received. The association took care of the surplus. The man who would not join enjoyed the same price and didn't pay the cost of helping to dispose of the surplus. After a period of six years of successful operation their contracts had expired and so they sent their field force out to sign the membership over again, and out of 10,000 members more than 90 per cent refused to sign a contract for a second period. When I talked to the officers of the association as to why that had been the case they said that hundreds and thousands of members of the association when they were approached said, "We believe the organization has been an unmixed good to us. It has made our business successful. But we are sick and tired of carrying the non-member on

our backs, and we are going to let somebody else carry the load."

So less than 10 per cent of the membership of this great co-operative institution were willing to sign for a second six-year period. This year the price of tobacco because of a short crop is reasonably good, but with another year of prosperity and the consequent heavy planting, we may expect very shortly a return to the distressing experiences that preceded the organization of the Burleigh Association, and when that comes, who is to blame? Those growers of tobacco who can't see beyond the immediate present; those who can't see that through joint action lies the security of their business.

Had there been working vigorously in that section a strong Farm Bureau organization that could have pointed out to those growers of tobacco the folly of the thing they were doing that disaster might have been averted. Their own officers went out and warned them of what would come; but they were too close to the membership of the organization itself. It was just as though one of the family were attempting to warn them of what lay in the future. Have you observed that we take counsel and advice almost invariably with better grace from some one outside our immediate circle than we do from some one near to us? And so if an overhead organization could have gone to those people, pointed out the danger that confronted them, that institution might have been saved.

I have worked with co-operative managers and with members of co-operative associations that at times have wondered what service the Farm Bureau could render them. I say this, that it has unlimited power for maintaining and sustaining these important co-operative associations that in and of themselves are unable to sustain and maintain their membership. After all is said and done, the function of a co-operative association is the distribution and sale of a commodity. It isn't to take care of the various other functions that must come up which affect the economic welfare of a community.

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A little while ago we were confronted with the question, "What benefit comes to those who organize which is denied to those who are not members of the organization?" We were very much intrigued with that inquiry. We wanted to be able to point out specifically the benefit that came through organization, and so we secured the services of a young German industrial engineer, a man who is admirably trained, and views matters from the scientific standpoint. We turned over the facilities of our office to him and had him visit some of our State Farm Bureaus and visit the United States Department of Agriculture at Washington. He brought back certain conclusions showing the degree to which the organized farmer can control the factors affecting his business, and compared to the degree to which the unorganized farmer can control the same factors.

I am not going to take your time to go into the analysis that he made and to give you the reasons for each deduction, but I do want to give you the conclusions that he reached, and from those conclusions you may be able to determine whether it is worth your while to go out and sell the Farm Bureau to your neighbor.

Taking those three important branches of the farmer's business, production, marketing, and financing, we find that the factors entering into the business of production are controlled by the unorganized farmer, the farmer who is ignorantly selfish, in the proportion of only 25 per cent. He has a partial control over 67 per cent of the factors affecting the production of his crop. He has no control whatever over 8 per cent of the factors entering into production.

On the other hand, the organized farmer who co-operates with his fellows, who uses the facilities of his agricultural college and of the experiment stations, works with his county agent, buys certified seed which is provided through the farmers exchange or the branches of the Farm Bureau created for the distribution of seed of known origin, who participates in and attends demonstrations in short, the farmer who uses to a maximum degree the facilities that an organization makes available for him, that farmer has complete control over 92 per cent of the factors entering into

production. He has partial control over 8 per cent of the factors entering into the production of his crops, and yet, there are men who insist that it would be to their detriment to join an agriculutral organization which is working to solve the economic problems of agriculture.

Do you wonder that I speak of that, as those who are ignorantly selfish as compared to the farmer who will co-operate and who I could designate as those who are intelligently selfish? It doesn't profit us if we produce the finest crops in the world if we can't sell them.

So we take up next the factors entering into the marketing of our agricultural products, and there we find that the unorganized farmer, the fellow who will not work with his neighbors and the fellows in his same business, has partial control over 12½ per cent of the factors which enter into marketing. He has no control whatever over the remaining 87½ per cent of the factors which enter into the processes of marketing, and on the other hand, this same co-operative farmer who will work with and through his organization, using to a maximum degree the facilities made available through that organization has partial control over 12½ per cent of the factors entering into marketing and complete control over 87½ per cent of the factors entering into that part of his business.

Then we come to the matter of financing. The unorganized farmer has no control whatever over 50 per cent of the factors entering into financing. He has complete control over 10 per cent of those factors and has partial control over 40 per cent of those factors; whereas, the organized farmer has full control over 90 per cent of the factors entering into financing his business and partial control over the remaining 10 per cent.

I wish, folks, that we had time to go into the means whereby these deductions have been reached, but as you follow them through you find them so logical, so sanely arrived at that these conclusions are inevitable. Does not this, then, bring us to the conclusion that in organization lies the solution of the problems of agriculture?

Mr. Watson spoke of the need for organization in that our tax problems shall be solved. There can be no question as to that. But that same need of organization is just as great in our efforts to solve each of the other problems before us. Well, I wonder sometimes just when we are all going to get organized. Occasionally I feel just a little bit distressed because of our apparent slowness, and then when I stop to think that this whole great Farm Bureau movement is just in its infancy, that the first Farm Bureau was organized only ten or twelve years ago, (I am referring now to the State Farm Bureaus) I am convinced or constrained to think that we have made rather remarkable progress. I believe that we stand today at the threshhold of the greatest forward movement in organized agriculture that America has ever seen, because we are learning the value of working together.

Just a little over two years ago I had an experience that I am going to relate to you and then I am going to close. I have told it very often as I have gone about through the country, because I feel that in that experience is a worth while story.

I was meeting with the County Farm Bureau in one of our very remote sections, and we held our meeting in the American Legion Hall. It was snowing outside and the snow had piled up three or four inches deep. They had a good, hot fire up in front, and I noticed an old man come and sit down right in front of me. I thought at first that he came right up in front so he could listen to me. Then I discovered I was mistaken, that he was there so he could spit in the stove! He was chewing tobacco, a lot of it, and he sat and spit, and the stove would sizzle each time he'd hit it, and I sat and watched him as I talked, and I could see that I was making no evident impression on him.

I talked about co-operation and teamwork just as earnestly as I could, and I felt so far as he was concerned, that it was a total loss. After the meeting I stopped for a few minutes to talk to the officers of the Farm Bureau, and as I came down the walk to go uptown I noticed the old man hanging over the gate. He spit right down in front of

me and stopped and looked up. He went on chewing and said, "Wal, do you think you will ever get the farmers to belong to your Farm Bureau?" and he spit again.

Suddenly there came to me a story that I learned when I was a child in Sunday School. I said, "My friend, I am going to answer your question by telling a story from the Hebrew Scriptures. You know the Lord sent Moses to bring the children of Israel out of Egypt into the Promised Land. It wasn't a very long journey or a very difficult one, and Moses went there and preached to those people, and he prayed with them, and he worked with them just as earnestly as he could. Unfortunately for Moses he wasn't a very good preacher, so the Lord said to him, "Moses, call your Brother Aaron to help you on this job." So both Moses and Aaron preached and worked and tried to convert those old hard-headed, stiff-necked, ignorant, suspicious fellows into doing the thing they should do. He didn't get anywhere with them. Then the Lord sent some miracles from above, great supernatural happenings that should have been the means of convincing those people that they should do as they were told. But after each miracle had passed they came to Moses and said to him that that was a pretty good show and to give them another one, make another demonstration and maybe they would believe.

"Then came the scourges. Under the lash they became humble." You know, folks, in the day of our distress we always are more humble than when things seem to be going just as we want them to. "They became humble and they began to feel that they should do as Moses warned them. Then the armies of Egypt came around them, and they gathered on the edge of the sea and lo, the sea rolled back and they marched right through the sea on dry land, and when the Egyptians entered into the sea the sea rolled over them and engulfed them.

"You know, that should have converted them, but it didn't. They got over on the other side and built their golden calf. They put Moses and Aaron to ridicule. They were just as hard-headed, and ignorant, and suspicious as they always had been. So for forty years Moses led those

old hard-headed people through the wilderness until at last when all of the old hard-heads had died off Joshua took those who would be converted, the younger generation, and they went right on into the Promised Land."

You know, the old man had become so interested in the recital of that little Biblical story that he either swallowed his tobacco or something happened to it, because he quit spitting. He leaned further over the gate and said, "Do you think that I am one of those old hard-heads?"

I said, "Brother, I hope that you are not. You will have to answer that for yourself. But if you are, and unless you change your ways I hope the good Lord takes you pretty quick."

The old man followed me up the street and as I stopped at the drug store corner to bid the county agent good-bye, he said, "Maybe I'd better join your Farm Bureau." I have not been back there since. I don't know whether he was really converted to the need for working with his follows or not. If he is, he is still in the organization. If he is not, he joined it for a year and then his membership would cease and he wouldn't do us much good at the best.

Folks, the need of today in agriculture and country life is for a strong, vigorous, active farm organization engaged in seeking a solution of the economic problems of agriculture. If I could give to each one of you one specific charge it would be this, that when you go home from this annual meeting you enter into organization and membership work with more zeal than you have ever had in all your lives before. Think of it, if every Farm Bureau member in Maryland would secure just one more good Farm Bureau member it would mean a 100 per cent increase in a year, and that task is not impossible.

It is my privilege to come to you representing the Farm Bureaus of forty-three States, hundreds of thousands of Farm Bureau men and women, and now our boys and girls who through club work, are beginning to participate in some of the activities of the organization. And for all of those people I carry this message that we are expecting Maryland this year to come through with a greater membership than

you have had in any year in the past. It is necessary that you should, not only in order that you may carry your part of the load of the American Farm Bureau, but in order that you shall work out successfully and satisfactorily the problems which you have here in your own state.

In the American Federation we have an increase in the year just closed of 29,653 farmers. We want next year that Maryland shall head the procession in the acquisition of new Farm Bureau members. I feel sure that in delivering this charge to you that I am doing so knowing that you will deliver the goods, and that we can expect an increase in membership in the State of Maryland, that each of your county federations will do their part, and I am sure that there is nothing but success in store not only for this State, but for the Farm Bureaus throughout the entire country. (Applause).

CHAIRMAN COHILL: I want to tell a little story. No doubt some of you have heard it, but it is worth repeating. A man fell overboard off a ship. A sailor jumped in to save him and he grabbed him by the leg; it was wood and it came loose. He grabbed him by the arm and that pulled loose. He grabbed him by the hair; that was false and came off. A man on the deck said, "Why don't you save that man?"

The sailor said, "How can I save him if he won't hang together?" (Laughter and applause).

That winds up our program.

The meeting adjourned at five-ten o'clock.

FRIDAY MORNING

January 11, 1929

The Third Session convened at ten-ten o'clock, President Davis presiding.

PRESIDENT DAVIS: We are a little late in starting our meeting, which is probably due to a little hangover from last night. I believe everybody thoroughly enjoyed himself.

The first business this morning will be the reports of

the committees. The first is the Credentials Committee, of which Mr. Charles T. Cockey is Chairman.

(Mr. Cockey presented the prepared Report of the Credentials Committee.)

REPORT OF CREDENTIALS COMMITTEE

Your Credentials Committee has examined the records of the Maryland Agricultural Society, Maryland Farm Bureau Federation, and recommend the seating of delegates as follows:

From the Counties

County	Number Members Paid	Director	Delegates	Total
Anne Arundel	100	1	2	3
Baltimore	261	1	5	6
Caroline	88	1	1	2
Carroll	128	1	3	4
Dorchester	70	1	1	2
Frederick	175	1	4	5
Harford	313	1	6	7
Howard	197	1	4	5
Kent	159	1	3	4
Montgomery	259	1	5	6
Queen Anne's	189	1	4	5
Talbot	155	1	3	4
Washington	64	1	1	2
Worcester	131	1	3	4
Total	2,300	14	45	59

From the Federated Organizations

	Director	Delegates	Total
Agricultural Corporation of Maryland	1	3	4
Maryland Crop Improvement Assn	1	1	2
Maryland State Dairymen's Assn	1	3	4
Maryland Sheep Growers Assn	1	1	2
Maryland Swine Growers Assn	1	1	2
Maryland Tobacco Growers Assn	1	3	4
Maryland Vegetable Growers Assn	1	1	2
Maryland State Horticultural Society	1	1	2
Maryland State Beekeepers' Assn	1	1	2
Total	9	15	24

This will make the Convention consist of 59 delegates from the Counties and 24 from the federated organizations, or a total of 83.

The President and the Vice-President of the State Farm Bureau Federation are also entitled to a vote.

Respectfully submitted,

CHARLES T. COCKEY, JR., Chairman.
C. ASHBY DUVALL,
CHARLES S. CHESSER.

MR. COCKEY: My attention has been called to the fact that we have omitted the vote for the Home and Community Committee. We only deal with the credentials that are presented to us. There was no intention at all to slight the Home and Community Chairman, still, it is not altogether our fault.

MR. MASSEY: I move that a vote be included in our report.

(The motion was duly seconded and carried.)

(It was voted on motion duly made and seconded that the report be accepted.)

PRESIDENT DAVIS: Next, we will have the report of the Committee on Amendments to the Constitution.

MR. HOLTER: We find no changes to be made to the Constitution, so there is no report to be made at this time.

PRESIDENT DAVIS: The next is the report of the Auditing Committee. Is the Chairman present? (No.) If not, we will pass on.

The next thing on our program is "Greetings from the University of Maryland," which were to be delivered by Dr. Pearson, but he has been ill for quite a while and is still ill, and the gentleman that we have in mind to present those greetings is Dr. T. B. Symons. He is a very bashful gentleman and sits way in the back of the room where nobody can see him, but I'd like him to come up here and tell us his little story.

DR. SYMONS: The Chairman of the Board of Regents and Chairman of our Board of Agriculture has kindly consented to represent the President on this occasion.

PRESIDENT DAVIS: It certainly is a great pleasure to us to have Mr. Shoemaker with us, I am sure. Our meetings are not complete without him. So I hope he will come up here and do his part. (Applause.)

GREETINGS FROM THE UNIVERSITY OF MARYLAND

BY S. M. SHOEMAKER,

Chairman, Board of Regents.

Mr. Chairman, Members of the Maryland Agricultural Society and Farm Bureau Federation, Ladies and Gentlemen:

I regret, as I am sure you all do that the severe illness of Dr. Pearson makes it impossible for him to attend this convention and present in person his greetings and good wishes for the continued growth and success of each one of your member organizations.

You may be sure that it is a very real regret to Dr. Pearson that he is denied the privilege of being with us to hear the many interesting and inspiring addresses, all of which mean so much to the great cause of agriculture, to the welfare of which his life has so long been devoted.

Since Dr. Pearson cannot himself thank you for the splendid support and co-operation you have given his administration of the affairs of the University, it is my pleasant duty to thank you not only for him but also for the Board of Regents.

When we realize that only twelve years ago we farmers were given the opportunity to reorganize the agricultural affairs of the State, and when we recall the conditions then and compare them with what we have today, I believe all will admit real progress has been made. Don't misunderstand me. I am not asking that you be content with things as they are, constructive discontent is the only road to betterment.

We sometimes learn that the University of Maryland is costing the taxpayers too much money. When you hear this remind the speaker of the many items that are included in its budget—the professional schools of Law, Medicine, Dentistry and Pharmacy in Baltimore, the schools of Agriculture, Engineering, Home Economics and other departments at College Park—the State Experiment Sta-

tion, the Extension Service. Then add to these the Livestock Sanitary work for control of animal diseases including the eradication of Bovine Tuberculosis and Hog Cholera. Then the control of plant diseases, including a really constructive effort to check the Japanese Beetle.—I'm not through yet.—We must add increasing efforts to safeguard the quality of seeds, feeds and fertilizers. Possibly I have failed to mention some activities but I believe each one I have mentioned is rendering a worth-while service either directly or indirectly to all the people of the State. It is constantly the aim and purpose of the Regents and of its Executive Officer, Dr. Pearson, that the investment shall be profitable financially as well as in better comfort, health and happiness. However, no possible effort of all the agencies mentioned can bring these results without just such organizations as are here represented. For instance, could any Board of Agriculture or any amount of State appropriations have caused the marketing of over 95% of the milk consumed in Baltimore to be handled by the milk producers' own organization? Who but the tobacco growers themselves, through their own organization have changed the deplorable condition that has long existed in that industry?

The outstanding bright spot in our agricultural situation is the intelligent way our farmers' organizations are studying the marketing of their crops. We are wonderfully fortunate in many ways with nearby markets and our great diversity of soil and climate, but we are even more fortunate in that our farm people have the intelligence, industry and thrift that makes it a real pleasure to your Board of Agriculture and to its Executive, Dr. Pearson, to work with you. In the name of both I thank you for this opportunity to greet you and to pledge our most earnest effort for the continuation of your success and prosperity.

PRESIDENT DAVIS: Dr. Symons got off the last time, but I guess we have him now. On our program we have, "Greetings from Extension Service." You all know the Exten-

sion Service and you know the amount of help the Extension Service has been to the farmers of this State. In fact, they have taught us to grow so much and produce so much that their next big job is to teach us what to do with it after we have produced it. We used to hear a lot about the man that was a real benefactor to the human race being the man that made two blades of grass grow where one grew before. I think we have passed that point long ago, and our next big job, I believe, is to find out some way to profitably dispose of that extra blade of grass, and as the Extension Service has been a big help to us in the past, we certainly have a right and I think confidently can expect a lot of help on learning what to do with that extra blade of grass. We will call on Dr. Symons for his greetings now. (Applause.)

GREETINGS FROM THE EXTENSION SERVICE

By Dr. T. B. Symons, Director.

Mr. Chairman, Ladies and Gentlemen;

In extending the greetings of the Extension Service and the members of the institution, the working force, I want to assure you we appreciate not only the remarks of the Chairman, but the hearty support that has been given our organization throughout the State. I know I am speaking for every one, man and woman, specialist and agent, when I say that they are devoting themselves earnestly towards serving the problems of agriculture in this State.

I well recognize the pertinent remarks of the Chairman, that while we have aided and increased production, the problem now is to aid in its distribution and marketing. So much so that last year we concentrated our entire extension conference to problems of marketing and distribution. We are making progress. But I believe that it is wise for us to make progress slowly in the marketing and distribution of our products. We don't want to be in the position, as was cited by your distinguished Secretary yesterday, of the Burleigh tobacco growers of Ken-

tucky where they had a strong organization five years ago and today they have nothing.

When you look over the situation as it is presented to the agricultural interests of Maryland—we have a diversified agriculture—it is a problem to organize the egg producers, it is a problem to organize the wheat producers, or other producers as is so successfully being conducted now by the milk producers and the tobacco growers. I only throw out the suggestion that the milk producers are shipping to this single market, that the tobacco growers ship to this single market, that the egg producers ship all over the country to a hundred markets, that the fruit men may ship and do ship to a hundred markets, so it is another distinct problem, one that challenges this organization, one that challenges our Extension Service, and one, Mr. Chairman, if we all work together we will solve in time. (Applause.) The sooner we solve it, the better.

I was recently very much struck, and I am afraid sometimes we don't appreciate our situation. I was called, unfortunately on Tuesday, to go to Norfolk to attend an interstate meeting for handling the potato industry, an industry that has brought $33,000,000 to the States in early production of potatoes, and which last year brought $10,000,000, a loss of over $20,000,000 due to the fact that the farmers produced too many potatoes and they could not be marketed.

The great thing that struck me is this, that there is a region extending through Maryland, Virginia, North Carolina and South Carolina, and including New Jersey covering five States, and it is a problem for each of the States, and then to co-ordinate all of the States in a project to handle the region. It presents to our minds a splendid opportunity, that if it is possible to organize an industry we must abandon State lines, and that I believe is one of the secrets of the success of the West. We often point to California. California has a stretch of 800 miles with one chairman of their Board of Agriculture, with one director of extension and markets, with one State organiza-

tion, covering a distance of 800 miles, the production of which can be co-ordinated and sold and distributed to the markets of the East.

With the potato situation, I will only cite it, we have two counties representing three million dollars. Virginia has about sixty thousand acres devoted to potatoes, and then we go to North Carolina and South Carolina. If that was in California it would all be in one State and one group of people. But here we have a little different situation. So I only mention that perhaps, to indicate that here in a concentrated area, with Delaware, Maryland, Pennsylvania, and Virginia, all of them constituting nothing like an area of the West where they have these large co-operative organizations, we will have to get a viewpoint of co-ordination in areas, to perfect the effective organizations that will help us in the marketing of these crops.

Mr. Chairman, I didn't intend to elaborate quite so much on that particular subject at this time. I wanted to refer particularly to our organization in Maryland. I remember when you were discussing the American Farm Bureau convention and the organization of the Extension Service in some States and their co-operation with the Farm Bureau and other organizations, you pointed out that in some of the States of the West the Farm Bureau dues had been contributed very distinctly towards the support of the county agent system, and practically all of those States now have a steady tendency towards public support as being the wiser policy. Let me say that we are proud in Maryland of the inauguration of the service upon a publicly supported basis. Our State board, our president, our force and executive staff believe that the county agent system should be a publicly supported agency, and since 1917 we have had a county agent in every county of Maryland. This State is proud of that accomplishment and is practically the only State in the Union that has maintained a county agent in every county since that period.

The same is true of the home demonstration work. We have had a home demonstration agent in every county except three since 1917, and that is also an outstanding accomplishment for our State. I believe the policy that these men and women should be publicly supported agencies is a sound policy, that by virtue of their positions as public servants they can serve all the farmers, they can serve the Farm Bureau, they can serve the Grange, they can serve other organizations more efficiently by being publicly supported from the taxes of the county and the State and the nation than by funds contributed by any single organization.

Incidentally, my friends, the Farm Bureau is fortunate in Maryland in that any part of its dues are not extracted for the payment of these services. Therefore, we should use that money, we should use our dues more effectively than is possible where it has to be contributed towards the support of county agents or home demonstration agents.

I was only remarking about this the other day in talking with Mr. Lincoln in our executive meeting where he said in Ohio they are now developing or changing over to a publicly supported basis, that the State of Ohio contributed up to last year $200,000 from the dues of the Farm Bureau towards the support of their county agent system, and that now they are getting it back to the basis where the public will support the agencies of the respective counties, will take over that charge and that agent who had his office in the Farm Bureau offices. They saw where the agent could render greater service to the Fram Bureau by having a separate office than in the office where business of all kinds was being done by the Farmers' organization.

So I feel that we are fortunate in Maryland by having set up our agencies on a publicly supported basis, and we are fortunate, friends, in having a harmonious relationship between our organizations.

I just wish we could all realize the opportunity that is presented to us. I want to ask you men and women here, are you givers, or are you just receivers? Are you going

to give in 1929 to the organization of the Farm Bureau, or are you going to be a receiver from it? Are we going out and give our service towards the organization of our forces for a more prosperous condition of agriculture, for organization in connection with marketing, for general organization work, or are we going to sit back and be a receiver of what the Farm Bureau, of what the Grange, of what the Extension Service, or of what other organizations are going to give us? I ask you if you are going to be a giver or a receiver, and I hope that every one of us is going to be a giver, that we are going to give of our service, individually and collectively in the community, in the State and in the Nation towards building up this organization of farmers which is so essential to make our interests felt, to handle our own business effectively, and to do for the people of this State and at large what agriculture in its broadest sense can accomplish for the Nation.

Now, in thinking over the remarks on this occasion, as was pointed out by Mr. Shoemaker, some times you think it is very, very easy for one to think that we at the Extension Service have lots of money, and that the other divisions of the institution have lots of money, and yet, my friends, it is the most pathetic thing that I have to experience as an executive of the Extension Service, to meet the earnest demands and pressure from various interests for assistance. It is so hard to discriminate, it is so hard to help here and help there and turn down what seem to be worthy projects when we are unable to meet them effectively, particularly in these past few years when the demands seem to have been tremendous.

I well remember one day when the Society met before the Farm Bureau was created. I thought if we ever had $50,000 to distribute over the State of Maryland in efficient work we'd be flying, it would be a wonderful accomplishment, and yet, today with twice and three times that we are unable to meet the crying demands of the respective industries.

So I said to some of our associates, "I would like to see the proportion of the extension service money that is being devoted to the respective industries, so that you folks would

be able to have a vision of the amount of money that you are investing in your particular industry from the standpoint of education, organization, co-operation, and promotional work." Mr. Trenk, our forestry specialist, and Mr. Carrington, were requested to work on getting up some charts. They are very hurriedly prepared, because we only were able to get to this last week, and I wanted them in chart form. I wanted a large chart that I still believe would be more effective, but time and money prevented preparation of charts such as we would like so we will show slides. The charts probably would cost $100 and the slides, I think, we have been able to secure for much less, $10. That shows an illustration of the use of the lantern.

I will now show you a few of these slides illustrating the various industries and the amount of money, and I want you to get this exactly right, the amount of money computed on the basis of the time of the agent, the time of the home demonstration agent, the time of the specialist, the travel—in other words, the total amount of the extension service budget as applied to that particular industry, not the amount of money that we have to put in specialists, or that we put in agents, but that money plus the time and expense of all the agencies in the whole State. I will also try to cite as we go through the amount of money that we have at State Headquarters allocated to these respective industries.

Now, you can appreciate the manner in which these are combined. I would have preferred a chart on corn, which is a tremendous crop, the biggest crop in the State of Maryland. I would have preferred another one on wheat and one on small grains. But you will notice, speaking generally of field crops, we produce 800 tons for forage crops, we produce 21 million bushels of corn, and we produce nine million bushels of wheat and small grains. Now the extension funds available, including all of the county agents, and that is computed upon the amount of time that they devote to this particular crop in their counties, all of that put together amounts to $32,000. It represents 10 per cent of the whole funds that are devoted to extension and repre-

sents the point I want to sell—eight-tenths of one per cent of the industry.

Now then, as business men and women you are devoting from public funds in extension work, and extension work alone, eight-tenths of one per cent to the promotional work, to the educational work, to all phases of the great corn, wheat, and forage crop industry of the State.

Now, as to the number of farms, it is a very easy thing to say, "My goodness, you certainly can help me." The individual farmer can say, "The county agent can come and help me." But here we have 45,000 farms that are producing forage crops, we have 43,000 producing corn, and we have 31,000 producing small grains. The total value—this is the production now, not the plant, not the value of the farm, but the production of this crop is $39,000,000. This represents $39,000,000, and the total amount that is being devoted in time and money by the whole extension service towards this particular industry is $31,000.

(Slide) I might have said to the previous slide, but we haven't time, that among other things and accomplishments of Maryland, we won 27 prizes just recently out at Chicago. We had a grand show up here of corn. We had last year 200,000 bushels of seed wheat treated for smut, and many other accomplishments we could say that represent progress in that industry in the various phases of farm crops.

In truck crops we have here a total production of potatoes, six million bushels; we have cantaloupes, 9,035,000 crates; we have cucumbers, 330,000 bushels; we have fresh greens and peas amounting to 406,000 bushels, incidentally a crop that is growing tremendously, and here is a bean weevil that has spread over the State last year, and while we made no special budget for that, I am convinced that we are going to be confronted with all kinds of demands this next year to control this pest, which probably spread quicker than any insect pest we have ever had. We have tomatoes, we have sweet corn. The number of farms we have raising these crops is 44,600, and we have a total value of $15,413,000. The extension funds available, that is including the time these men devote to these subjects, is $6,000,

the percentage of the whole budget is 1.9, the value of the industry is four-tenths of one per cent.

Supposing this group of men would go to General Motors and say, "General Motors, we'd like to know how much money you are putting into your sales, into your research, into your promotional work." It would go into millions, as you gentlemen well know. The same is true of General Electric; the same is true of every large corporation. I'd like for us to think of ourselves as a large farm corporation, that this is just one department, the department of efficiency, if you please, which takes the results of the research department, the experiment station, the department of agriculture, carries it out—to whom? To you men who are production managers. You are a production manager in dairying; you are a production manager in truck growing; you are a production manager in tobacco raising, and you are calling on the Extension Service as an efficient, helpful agency to bring to you these results. In truck crops we are putting four-tenths of one per cent towards that industry.

(Slide.) This shows the comparison in the dairy industry, a wonderful industry in our State, and in many ways it has saved the farmers in many sections. Perhaps our greatest problem is to look to the future in seeing that this industry will not be over-expanded, and that we can improve and stimulate production per cow and the efficiency of the business. The total number of dairy cattle in the State is 172,500; number of farms producing, 29,792. The total value of the milk, butter, and cheese sold from the farms is $20,000,000 approximately. That doesn't include the value of the cows or the value of the farm, just the product. The Extension funds available, including the agents' time, etc., devoted to it is $26,653; Extension funds percentage is 8.5, and the value to the industry is thirteen hundredths of one per cent.

I said I was going to read the actual money we allocate from headquarters for specialists' work, and don't forget the county agents in the field, and that we want special-

ists to help them. For the moment I will say that in field crops it was $4,650; in dairying, which is the second slide, it is $6,850 or two-tenths per cent of our funds.

Now, I maintain, men, that here is an industry that should remain the most profitable in the State of Maryland, because we are in a condensed area, these people must be fed, and milk is a food, and it is up to us to maintain this market and to help the very successful agencies as represented by the State Dairymen's Association, a leading organization throughout this nation. I really don't believe that any State can point to a co-operative that is so successfully managed that is combining the interests of 4,000 farmers and that is developing an efficiency that truly represents what we may have as a goal towards the future work among farmers, as does the State Dairymen's Association. We have had this past year Somerset County going into the dairy business, here is Worcester just started and they want us to put a man on. Only recently we had a demand—it hasn't come up straight yet and I don't know how we are going to present it, but a very enthusiastic representative down in Worcester County wants us to put a specialist in that county to help the county agents and to help those dairymen to get into the dairy business. They have erected a cooling station at Snow Hill and they are ready to go, in fact, are waiting to go now, and they want us to give them some extra help. The same is true in Somerset; the same is true in Dorchester County, and other sections are looking towards that same thing.

In the potato problem they want to consider diversification, and they point to the dairy business as a possible diversifying business and a profitable one. I say that there is where our minds should look, and look carefully, towards protecting the industry from being overdone and for protecting the interests so that the farmer who is in it will be doing it to the highest state of efficiency. You see, that gives you the illustration of the amount of money that is devoted to it.

(Slide.) Poultry. You'd be amazed to see the developments in poultry and what we are confronted with. In 1910 we had 2,650,000 chickens in Maryland. In 1920 we had 3,436,000. In 1925 we had 6,198,000. In the development of the poultry industry which represents these figures there were 20,000,000 dozen eggs. Then some of you men very easily can say, "My, if we produce 20,000,000 dozen eggs, isn't it possible to get those egg people together so that we can sell the eggs on the New York market and get the price that we deserve?" And yet, we are in the pathetic condition that California, 3,000 miles away, can ship eggs to New York, nine days on the road, and bring a higher price than the eggs from Maryland. If that isn't a challenge to us, my friends, I don't know what is. Yet, it is a very practical problem. We have tried for several years to organize those interests that produce 20,000,000 dozen eggs in this State.

Other fowl, 575,000. Chicks, 7,500,000. Think of it; we have hatcheries in this State where when the eggs are set they number 5,000,000. It is an amazing thing to go and see how these eggs are set in incubators, 400,000 eggs set at one time. Think of it—an amazing thing. The production is 7,000,000 to 10,000,000 chicks a year. These men, owning these hatcheries, have come to our disease departments, have come to our other departments. They say they want some help, that the chicks have diarrhea and other diseases.

Here is a practical problem, and here we have been helpless. This last year I was able to find $250 to cooperate with the poultry associations in getting a man to help in the certification of our chickens. So we have here an industry that is worth $13,000,000, and the Extension funds available are $16,000. This represents 5.2 per cent of available Extension funds. It also represents twelve hundredths of one per cent of the total value of the industry. From headquarters we have available $4,250 devoted to specialists' assistance. Notwithstanding the progress that is being made in the industry, when we look

at it from a business standpoint, no business would live and go forward as it should go with twelve-hundredths of one per cent devoted to this important phase of the work.

(Slide.) Live stock. That is a very important industry and is steadily growing. We have felt that a million sheep from Maryland farms was not much out of the way. There is big money in it. Here we are, 15,000,000 people who like baby lamb, like lamb chops, and here is southern Maryland producing baby lambs. There is an awfully fine opportunity for us to develop that business, advertise it far and wide. We have 99,000 sheep, we have 200,000 hogs, and we have 54,000 beef cattle. I wish I could say something about each one of these industries. The Extension funds available, $16,000; Extension funds percentage 5.3. Value of the industry (that is what I want you to get)—the value of the industry in the percentage of money that you are putting into Extension promotional work, is nineteen hundredths of one per cent. Here we have a case—why, the boys in baby beef work developed in the county of Washington this year baby beaves and sold them for more than all the money we are putting into our work at headquarters, in specialists work. To live stock we are devoting $4,200 or 1.3 per cent to one specialist in the live stock industry to serve the county agent force and all the farmers in extension work throughout Maryland.

(Slide.) Horticulture is a big industry in the State, and a wonderful opportunity. It makes me sick, some times, when I think that with our intelligence and our region here that we haven't a strong co-operative horticultural group selling all of their apples and all of their peaches through a co-operative organization. But there are very practical problems in the way, men. It has been tried, and we are working on it, and I believe that some of these days we will be able to do it. We raise 2,330,000 bushels of apples, 430,000 bushels of peaches, 1,000 tons of grapes, 26,000,000 quarts of strawberries. A pathetic story came up from the strawberry region this last year of a mite that is putting them out of business, and we couldn't put a

man on it. Pears, 289,000 bushels. Number of farms producing, 39,000, total value, $6,576,000, Extension funds available, $17,000 including all the time of the men in all the different counties, 5.5 per cent, twenty-eight-hundredths per cent of the value of the industry is being devoted to this work.

(Slide.) Tobacco. Total production 25,000,000 pounds. It is probably a disgrace upon several of us that only this last year have we been able to put on a part-time specialist in tobacco. We are fortunate that county agents in those counties have known the crop and have rendered a valuable service, but never could we put a tobacco specialist on the subject. It is a very intricate subject, more difficult, I think, than any other problem. It is just a peculiar one. A man must know tobacco and know it from the ground up to be able to advise on it. This last year we were able to devote a part of the money with one man devoting part time to specialist work and part time serving as county agent in Prince Georges with an assistant. At headquarters we are devoting to the tobacco, all told, including the county agent work in the counties, $3,075, one per cent of the fund, five-tenths of one per cent devoted to the crop, and Mr. Gardiner has said time and again that if he just had more tobacco and better tobacco we'd be able to hold the big salesmen. There are about four of them in the country now that are buying tobacco for American cigarettes, an industry that has never been known to expand in such lengths as has been the case in the cigarette market. Maryland tobacco is needed. It is a fine opportunity.

(Slide.) Diseases and insects. There is a story on that, as the total economic loss due to insects is $7,231,800. The percentage of total value of all crops injured is 10 per cent. That is the regular estimated value, very carefully estimated, by the Department of Agriculture. The total economic loss due to plant diseases is $8,988,331. The percentage of value of all crops destroyed is 13 per cent. Extension funds available, $11,000. Extension funds per

cent 3.5. Economic losses seven-hundredths of one per cent.

I wish I could give you a story of the Japanese beetle situation. Suffice it to say that we have established a nation-wide principle by the demands of the Maryland farmers. We have contended that we didn't want the Federal quarantine as long as we were not prejudicing and hurting other States, that we should not embarrass our producers by having the difficulties surrounding the Federal quarantine problem. Fortunately, Chairman Marlett of the Board, accepted the principle last year and gave us a chance. With the splendid support and co-operation of our President and Governor Ritchie last year, and your support, we got $10,000. We treated for the pest and used that money effectively.

Then this year we were presented with the spread of the insect, and at the conference we were able to unite with no difficulty at all from the standpoint of our own forces, and we presented a united plea. New Jersey said, "Here is the beetle down in Virginia, in Washington, and it also occurred in Hagerstown and Frederick. Draw a line from Hagerstown straight down through the Potomac, take in Virginia and Maryland and put them all in quarantine." To make a long story short, we made a plea for treating isolated infestations only extending the quarantine to the Susquehanna River. We wanted to keep this area clear and allow us to use our State quarantine and use our funds. To do that we had to make a plea for increased funds for treatment, increasing the appropriation to $25,000. We did the best we could by getting the Eastern Shore clear, because we said, "Gentlemen, it is a shame for a man who is in the center of the Eastern Shore, if we are going to put the whole territory in quarantine when the beetle occurs at Chesapeake City and occurs at Delmar. It is unfair to the man in between, the farmer, the nurseryman, or the peach grower, to put him in quarantine and have his market circumscribed." We got the Eastern Shore clear and we got the Western Shore clear, and that was with the help of the President and Gov-

ernor and all of our forces and the Farm Bureau, Mr. Stewart, and the rest of you. We were fortunate to have Chairman Marlatt sympathetic with this policy.

Even in Baltimore, where there is quite an infestation, we are going to control that, and Governor Ritchie has been good enough to include as promised, the $25,000 in the budget.

That is just one of the conditions. The bean weevil is another new pest that is going to give us trouble.

(Slide.) Canning crops. An awfully big industry that is threatened in many ways. It is threatened by the things that we must face, men. Texas is going into the fresh fruit and vegetable business by the thousands of acres. Cuba and Mexico are flooding our market with peas and beans. Italy is flooding us with tomatoes and it is a pathetic thing that the farmer in Italy can ship his tomatoes to New York cheaper than the farmer in Maryland can ship them there, just as an illustration. So that is the reason for the argument for the question of tariff on Italian tomatoes. Well, we have a big problem. The value of the product from the total industry is $4,917,000. The appropriation last year was $10,000., of which eight was expended. The extension funds available 2.8 per cent; value of the industry eighteen-hundredths of one per cent.

(Slide.) Honey. There has been a little debate and we have felt many times for many years that there is a big opportunity for bees and for honey production in Maryland and of course, in modern years the horticulturists have realized the absolute necessity of the bee. Nothing much has been done for the bee industry. Along about ten years ago we got a bill passed by the Legislature providing for the inspection of apiaries, but we have never had any funds to do it. We have just been helping them as much as we could. There are 12,000 hives of bees in the State. There are 1,664 farms raising bees. The production is 215,000 pounds of honey, no small production; wax 1,947 pounds, total value $57,000. We are devoting $486, or eight-tenths of one per cent of total value.

(Slide.) Here is one of these intangible things in life that can't be figured in dollars and cents, the Home Demonstration work. Mr. Trenk and Mr. Carrington came to me and said, "Look here, how are we going to figure and estimate the value of this work and compare it with what you get in return?" I said, "I don't know, but it is worth a million. Whatever you say, it can't be too much in its worth." But to try to get some semblance of representation, because I want you to know the amount of money that we are devoting to home economic work in the State, the number of women making all or part of their clothing, are listed as 58,000; the number of garments made annually, 421,000, and the value of the home-made garments $1,655,000. That was an estimate based upon the work that they had done. At the present time the extension funds available amount to $33,000; the percentage of extension funds ten and seventy-nine-hundredths, and value of the industry 2 per cent in comparison with the values. As I say, it is one of those intangibles where it is very hard to make comparisons.

(Slide.) Here is another feature. Number of counties reporting home demonstration work, 19; number of homemakers enrolled 4,929; number of community organizations assisted, 255. Extension funds available devoted to that work $9,000 and the percentage was 3 per cent.

The only tangible thing is this, and that is the picture of the farm women going from the Agricultural Building over to the Armory. Happier living represents more than a million to the State of Maryland, and I tell you, men, it makes your heart feel good to see those 500 women from all parts of the State come down and devote a week to get together for inspiration, for instruction, and looking forward to getting away from their husbands for a vacation. (Laughter.)

The other things are the features represented here (slide), the number of enrolled in home management, 3,000, those enrolled in food nutrition production 4,000 women and

1,000 girls. Extension funds available $30,000; extension percentage is 9.6 per cent, and if we could only get every mother to sit down at work when she is peeling potatoes, if we could only arrange all the kitchens so that the drudgery of the farm home would be eliminated, it is money well spent towards developing and protecting the agriculture of the future.

Mr. Chairman, I thought 12 slides could go through in 12 minutes. I am sorry to have taken quite so much time, but I hope that I have just given you, I might say, superficially, a picture of the industries, because a great deal of detail could have been presented, but it will give you a vision of the difficulties that we have in allocating our present funds to meet the demands of the farmers and farm women of Maryland. We want to thank you for your very fine support, and if there is anything that the service is doing wrong we want to make it right. If there is anything we can do to make it more efficient, we want to know it. We believe that we have an able body of men and women who are trying to render to the Farm Bureau all the service they can and are ready to stand back of you in any policy that you want to promote for the best interests of the State. Thank you! (Applause.)

PRESIDENT DAVIS: I am very sure we have all enjoyed Dr. Symons' very instructive talk. We probably had a hazy idea that the Extension Service was busy, and if we had trouble we could get them at any time. But this gives us a clear illustration of what they are doing and of the needs. I know we all desire to see that service made better and stronger, and I am mighty sure that we will be glad to help them in any way we can. We owe them a pretty big debt anyway, and I know that we all like to pay our debts. If at any time we can do anything to help the Extension Service we are certainly glad to do it.

(At this point President Davis appointed Dr. Symons to act as Secretary pro tem for the balance of the meeting due to the absence of Mr. Stewart.)

PRESIDENT DAVIS: We will now have the report of the Resolutions Committee of which Mr. Massey is the Chairman. I think probably the proper thing to do would be to read the resolutions one at a time and adopt them as we go along.

MR. MASSEY: The Resolutions Committee wishes to report the following resolutions for your consideration:

Resolution No. 1: "We commend the Maryland and American Farm Bureau Federations in their work during the past year and pledge during the coming year our wholehearted support in assisting the officers in carrying out the program of the two organizations.

'We hereby extend greeting to all farm organizations and stand ready to co-operate with any organization wherein by so doing we can get better agricultural conditions."

I move the adoption of the resolution.

(The motion was seconded and carried unanimously.)

MR. MASSEY: Resolution No. 2. "Gasoline Tax Law: We oppose any change in the present gasoline tax law."

I move the adoption of the resolution.

(The motion was duly seconded and carried.)

MR. MASSEY; Resolution No. 3. "Weather Bureau Service: We heartily recommend and urge the passage of the bill introduced in Congress by Representative T. Alan Goldsborough for the establishment of a weather bureau station on the Eastern Shore, and recommend its location at Salisbury."

I move the adoption of the resolution.

(The motion was duly seconded and carried.)

MR. MASSEY: Resolution No. 4. "Bond for Commission Merchants: The Farm Bureau recommends the passage of a bill requiring commission men doing business in the State of Maryland to give adequate bond to protect the farmers whose products they handle."

I move the adoption of the resolution.

(The motion was duly seconded and carried.)

MR. MASSEY: Resolution No. 5. "Automobile Licenses: We favor the enactment of legislation that will make pos-

sible the registration of ownership of automobiles and the issuance of all licenses pertaining thereto at the county seats of the respective counties, and in Baltimore City for city automobiles only."

I move the adoption of the resolution.

(The motion was duly seconded and carried.)

MR. MASSEY: Resolution No. 6. "Farm Theft: Because of the wide-spread thieving from farmers throughout the State, we urge the establishment of a trained State Police force with full police power. All that is necessary to secure this is the enactment of a law enlarging the present State Motor Police, and delegating to them general police powers."

I move the adoption of the resolution.

(The motion was seconded and carried.)

MR. MASSEY: Resolution No. 7. "We recommend that the Farm Bureau establish a Vigilance Service to co-operate with said enlarged State Police in apprehending those thieving from Farm Bureau members. Other State Farm Bureaus have organized such a Vigilance Service. Through the posting of members' property and the offering of rewards for information causing the conviction of thieves, they have done much to apprehend thieves, and to reduce the losses of their members."

I move the adoption of the resolution.

(The motion was duly seconded and carried.)

MR. MASSEY: Resolution No. 8. "We recommend that the Farm Bureau set up a finance and holding company, through which we can bring together all our various supply services—State and county, for better financing control and co-ordination.

"Likewise, as we set up new enterprises such as our Wool Pool, etc., we could finance and control them by and through the same agency. This is the day of consolidations and chain store operations. If we expect to meet competition and likewise keep the enemies of co-operation from splitting us apart by every kind of device and propaganda, we must so set up our business machinery that we can con-

trol not only our finances, but also our subsidiary units and their personnel. By this means we can inaugurate the best of business practices and secure and keep the best of trained management and personnel."

I move the adoption of the resolution.

(The motion was duly seconded and carried.)

MR. MASSEY: Resolution No. 9. "Fruit and Vegetable Commission Agency: We recommend that the Maryland Farm Bureau have as an objective the organization of co-operative fruit and vegetable agencies on the Baltimore and Washington markets and a co-operative Live Stock Commission Sales Agency on the Baltimore Market. Each of these should be set up as subsidiaries of the Farm Bureau finance and holding company."

I move the adoption of the resolution.

(The motion was duly seconded and carried.)

MR. MASSEY: Resolution No. 10. "A National Policy for Agriculture: The control of agricultural surpluses is the dominant economic question which faces us at the present time. This problem has become a national issue and is not of concern alone to agriculture.

"We believe that the question of proper farm relief legislation and the determination of a proper national policy for agriculture should be considered at an extra session of the 71st Congress when there will be ample time to give fair and reasonable consideration of this great problem."

I move the adoption of the resolution.

(The motion was duly seconded and carried.)

MR. MASSEY: Resolution No. 11. "Tariff: Tariffs are international issues and have for farmers in the United States constantly increasing world-wide significance. Our home market is always our best market. We believe that Tariff should be equitable in protecting agriculture in the same proportion as it protects manufacturers and industry. We urge a scientific and economic revision of the tariff rates by a non-partisan tariff commission as early as practicable."

I move the adoption of the resolution.

(The motion was duly seconded and carried.)

MR. MASSEY: That completes the report, which is signed by all the members of the Committee. I now move that we adopt the report as a whole.

(The motion was duly seconded and carried.)

DR. SYMONS: Mr. Chairman, as an appendix to the report of the Committee on Resolutions, I would like to move that we incorporate a resolution expressing our appreciation to the officers of the Association, and particularly to Mr. Stewart, our Secretary, for the very fine arrangements that he has made for this meeting and to include our regret that his illness has caused him to be absent from quite a number of our sessions. The arrangements, however, have gone through very fine, and it is a tribute to his executive ability and planning for all of us. I make a motion to that effect.

(The motion was seconded and carried unanimously.)

MR. MASSEY: Mr. Chairman, I wish to offer a resolution of sympathy to Dr. Pearson in his illness.

PRESIDENT DAVIS: It has been a great regret to us that Dr. Pearson isn't with us. We always feel that these meetings are not complete without him. But he has been quite ill for some time. I think he is getting better, but I think that a motion of this kind is certainly one that we are all heartily in favor of.

(The motion was seconded and carried unanimously.)

DR. SYMONS: Mr. Chairman, I think it would be appropriate to include in the report and to express our appreciation to the hotel for the accommodations that they have extended to us, and to the very fine quartette from Howard County and the Eastern Shore for the splendid entertainment that they have given us, and to Mr. McKnight and all others that have contributed towards the success of this meeting.

(The motion was duly seconded and carried by a rising vote.)

(At this point Dr. Symons assumed the Chair.)

CHAIRMAN SYMONS: Ladies and Gentlemen: Our very bashful President has asked me to preside during the election feature on the program, which is the Election of Officers, and I am going to ask the privilege of calling on Mr. J. W. Jones, a member of the Executive Committee and ask him if he will not kindly take the Chair during this procedure.

(Mr. Jones assumed the Chair.)

CHAIRMAN JONES: It seems to be the proper time for passing compliments around. I appreciate this little compliment that has been extended to me, and in order that we might extend this matter a little further, I am going to ask Mr. Cockey if he won't take the Chair. (Applause.)

MR. COCKEY: I am in favor of anybody that wants it. Nobody wants it, so it is up to you, Mr. Jones.

CHAIRMAN JONES: Well, friends, I knew Mr. Cockey wanted to say something, and this gave him the opportunity, so it is all right. We will proceed with the election.

You know it is our custom to have the Board of Directors put in nomination the President and Vice-President to be presented at this convention. Has any one that nomination in hand?

DR. SYMONS: Mr. Chairman, I haven't the official statement, but I understand that the Board of Directors nominated Mr. James W. Davis for President.

CHAIRMAN JONES; Mr. Davis was duly nominated by the Board of Directors. Are there any other nominations?

(The nomination was duly seconded and carried unanimously.)

CHAIRMAN JONES: It gives me great pleasure to announce that Mr. Davis is again elected President of the Maryland Farm Bureau Federation. (Applause.)

(President Davis assumed the Chair.)

PRESIDENT DAVIS: I am not like the young girl—I can't say "this is so sudden!" I had felt that probably I had served the organization long enough. But we had some things on hand the coming year and I felt if I was called

upon to carry through another year I would do the best I could.

I haven't any speech. I think you people pretty well know my speech-making ability is rather limited anyway; but I will say that I appreciate this honor very much. I will say that we have a big job before us in the coming year. We have gone through six years of successful work, and while our membership today is not as large as it was some years ago, I think we have a mighty effective, active organization

For next year our main job is to make this organization better and to make it bigger, because when everything else is considered there is still no substitute for membership. We have got to have membership; we have got to have an earnest, active, effective membership, or else our organization can't function as it should. I know there are lots of things we would like to have done that we haven't even attenpted to do, because we didn't have the membership we should have.

I will admit that a lot of the responsibility to bring about this increased membership rests with your state officers, and probably some of it on my shoulders. But I also want to impress on every one here that a large part of that responsibility rests on you. It is on the individual member. It is not always on your county presidents or your county secretaries, but it is on the fellow back home that will say to his neighbor, "The Farm Bureau has done me a lot of good. It will do you a lot of good. Come on in and join us and make it bigger and better. That is the way this thing works as I see it. It takes teamwork, and we have had a lot of teamwork in this State. We have had our organizations going along together, we have had our Grange, which I believe is the oldest farmers' organization we have, and I noticed today that the counties that are strongest and most active Farm Bureau counties are the Grange counties. I think the Grange even claims the credit for organizing the Dairymen's Association which is another organization that has done a mighty big job in

this State. I think there is even some little controversy between two of our counties about that matter. I don't know whether they have ever settled it yet, but I have heard fellows over in Carroll County say, "Well, the Grange up in Carroll County started this Association." Then I have been in Harford County and heard others say, "Well, I believe Carroll County is wrong. I believe we started it."

But I don't think that makes so much difference. We got it started, and it has done a lot of good, and we have tried to work together, we have tried to help the dairymen when they needed help, and they have helped us, helped us a lot.

We have the same thing with the Tobacco Growers' Association. They have done a big job, and we have tried to help them. Maybe we have helped them some. But the way to make this thing work is just like some years ago—you don't see many of them nowadays, but we used to drive a six horse team, and if we got all six horses or mules to lay up against the collar and do their share we got the load moved. But if we didn't have every one of them pulling up against the collar and doing their share we didn't get it far. That is just the case here. We haven't a one-horse or a two-horse load, but we have a six-horse job to do, and if every man that is interested in the welfare of the farmers in this State makes it a part of his job to help this organization and make it better, we can go a long way. It is hard to tell how far we can go. I think I have done fairly well for having no speech at all, and I thank you all very much. (Applause.)

CHAIRMAN JONES: Now, members, it gives me great pleasure to announce to you that the Board of Directors put in nomination Mr. Massey for Vice-President for the ensuing year. (Applause.)

(The nomination was duly seconded and carried unanimously.)

MR. MASSEY: Mr. Chairman, Ladies and Gentlemen: I greatly appreciate this honor, and I am going to tell you before I start talking that I haven't any speech. I haven't

written a thing down to say, but I had thought of a few things, and how in the world our President got them in his mind and said them, I don't know, because he said exactly what I wanted to say, and I don't know how he got next to it.

I was thinking during these splendid meetings we have had and the splendid talks we have heard that we ought to have gotten a lot of enthusiasm, and I hope you feel as I do, that your Chairman and your Board of Directors can't run this Farm Bureau, nor can the county presidents and county directors run this Farm Bureau, if must go back to your locals. This organiation is built from the bottom up, and to get a great, vigorous Farm Bureau in this State we must have good, strong, vigorous locals working.

So I am going to ask that all you people who are attending this annual meeting, who are leaders in your respective counties and have gotten some of this inspiration, to go back home and make a resolution that 1929 will be the greatest Farm Bureau year we have ever had, in gain of membership and in co-operation with other organizations and in work done. (Applause).

CHAIRMAN JONES: Mr. President, that completes the election. It gives me great pleasure to turn the meeting over to you again. (Applause).

(President Davis resumed the Chair.)

PRESIDENT DAVIS: We are getting pretty well towards the end of our program, but we have something of considerable interest to us. We were informed last night that there was a gentleman on his way to this State sent by the National organization. We have had negotiations going on in the National Farm Bureau Federation and they decided that there were certain States that possibly needed a little assistance in the way of organization work. We were one of those States. They decided to send us a man to work with us and help us in our reorganiation, and this morning just after Mr. Winder left it was my pleasure to meet a gentleman by the name of Mr. James. I told him my last name wasn't James, but my first name was, and we could buddy pretty well, I thought. It gives me a great deal of

pleasure at this time to introduce to you Mr. James, from Illinois, who has been sent on here by the National organization to assist us for some time in this State with our reorganization work. (Applause).

MR. JAMES: Ladies and Gentlemen: I am no speech maker; I am what you call an organizer, a man who gets out and tries to build up your Farm Bureau, so I won't say very much here only that I am mighty glad to meet with you people and that I hope we will be able to work together and co-operate.

Here is the idea of the Farm Bureau: It is organized upon the same principles as our Government. We have our county Farm Bureau which works on the county basis. Then our State Farm Bureau which works on the State basis, and then our National Farm Bureau which is the National organization and does things in a National way. So we are co-operating all together, and when you go back home, talk Farm Bureau, believe in it. If you believe in it yourself, you can put it across. If a man has objections to your Farm Bureau, knock out his objections, tell him to come along and go in with you, as a crowd will make anything stronger.

Now, over in Illinois where I come from—I can talk on a lot of subjects over there that we have been doing which are making our Farm Bureau stronger,—but years ago when we first started, (we are about ten years old over there) we were like a baby; we had to crawl before we could walk. Now we are beginning to walk, and we are rendering services to our members. For a while we extended that service to all of the farmers, but our members got to kicking about it, saying, "What's the use of having a Farm Bureau if a man who doesn't belong to it gets the same service as I do?" So we have been restricting our services to Farm Bureau members only, and in doing that we are building a stronger organization throughout the entire State. And you will find out that it will be that way in your State if you will get down to that point.

Take the matter of insurance alone. That is a hard proposition. It ought to really be an easy proposition in this

State as your dues here, I understand, are only $10. Over in our State the dues are $15. I have had a lot of farmers tell me, "Well, if I were paying $5 or $10, I wouldn't feel like I was paying out so much money, and I'd go into it." So on that basis over here it looks like we ought to have a strong Farm Bureau membership in your State.

But here is the point. In our insurance we have three insurance features. First, lightning and cyclone insurance, which one item alone in our mutual company saves a man more than Farm Bureau dues where he carries as much as $2,000 insurance, or in other words, the amount of money he pays to the old line company on his insurance can pay his insurance in our company, pay his Farm Bureau dues, and break even. If he carries more than that, he makes a saving.

Two weeks ago we had a man who saved over $40.00 a week in actual cold cash. Well, that is something that is interesting to the farmer when he can save the actual cash. This can be done in the automobile insurance, and in our new life insurance that we have just started over there. It has taken the State by surprise. We were to have $3,000,000 of life insurance subscribed before the first of January or we would not organize the company. We started out the first of October to get these subscriptions, and that was all to be among Farm Bureau members only. Two weeks ago the report in the general office was that we already had over $10,250,000 subscribed. That is done by co-operation.

I won't take up any more of your time. I hope to be able to meet all of you personally later on to work with you, and help you put this Farm Bureau over and make it stronger and bigger than it ever has been before. I thank you! (Applause).

PRESIDENT DAVIS: I am sure we have enjoyed what Mr. James had to say, and I know we will get better acquainted with him later on.

Is there any new business? I take it we have all had a pretty good time. We have all enjoyed it very much, and perhaps you think there isn't anything to bring up.

MR. MASSEY: I move we adjourn.

PRESIDENT DAVIS: We adjourn in the hope that we will come back here next year with a whole lot bigger Farm Bureau membership. I don't believe we could add to the quality of this meeting. I don't believe we could add to the quality very much of our Farm Bureau membership in this State. But I know we can add a lot to the quantity, and I believe that is our job. The meeting stands adjourned.

(The meeting adjourned at eleven forty-five o'clock).

REPORT

OF THE

Maryland State Horticultural Society

FIRST SESSION

TUESDAY MORNING

January 8, 1929

Baltimore, Maryland

The First Session of the Maryland State Horticultural Society, held in the Royal Arcanum Building, Baltimore, Maryland, convened at ten-ten A. M., Mr. E. D. McCain, President, presiding.

PRESIDENT E. D. MCCAIN: The meeting will please come to order. We will have the report of the Secretary and Treasurer, Mr. G. Rust Canby.

REPORT OF SECRETARY-TREASURER

G. RUST CANBY
Silver Springs, Maryland.

Mr. President and Gentlemen:

Since we met here last winter we have waged the usual, annual war on the many enemies of the fruit crop, and though we encountered conditions particularly favorable to the development of scab combined with a reinforced army of codling moth, we succeeded with a very satisfactory crop as a whole, both from the standpoint of bushels and of quality. Within our area and our membership were produced some apples that graded fancy and extra fancy, thereby demanding prices equal to the best Western fruit after its long and costly haul across the continent. Let us hope that the percentage of such fruit will be larger another season.

Your officers and committees have met at various times to

discuss matters of vital importance to the fruit industry of Maryland.

The summer meeting consisted of an inspection of spray and dusting machinery exhibited in the orchard of our President, and a lunch on the grounds of the country club of Frederick, at which we heard talks by the President, Dr. Cory and Mr. Coblentz, after which we made a tour of the orchards of Messrs. Baker, Delaplain, Haller, Thomas and Walker.

We have published news letters whenever it seemed that there was anything worthwhile to convey to our members.

I believe that your committee has arranged a program for this meeting that will be interesting and worth while.

The discussions as scheduled should bring us right to the minute on the several lines of work pertaining to the development of horticulture in the State of Maryland.

As Treasurer, I beg to report a balance on hand of $145.01 and ask that a committee be appointed to examine the accounts.

PRESIDENT MCCAIN: The next thing on the program is the Annual Address of the President. I will take a few minutes to report some of the things that your Executive Committee has done during the past year. I'd like to thank the members of this committee for the way they have responded to meetings.

The Summer meeting was held in Frederick. There were around 250 present, and it was a very instructive meeting, especially the spray and dusting demonstrations given by the different machinery companies. Then your committee has done whatever it could to further the fight against the quarantine for the Japanese beetle in Maryland, and we are very glad to report that due especially to the very fine work of Dr. Symons and Dr. Cory, Maryland has very largely been kept out of this Japanese beetle quarantine for this coming year.

Your Committee has also been willing, or offered to lend its support to the fight being put on by West Virginia in

regard to the apple rate from Western Maryland and West Virginia. It certainly is not a fair proposition, for example, that Rochester, New York, can ship a carload of apples to Charleston, West Virginia, at less cost than they can be shipped from Romney, West Virginia, to Charleston, West Virginia.

We have also lent our support to the protest against the proposed freight increase on barreled apples from New York to German ports which was proposed to be put in effect about the first of January by the steamship lines, and we are glad to report that the steamship companies report that the present rate will be kept in effect for the balance of this season at any rate.

The main activity of your Executive Committee during this past year has been to try to secure for Maryland University a new horticultural building. We know that for years the horticulturists of Maryland have rather kept in the background and allowed the other industries to go ahead and secure the buildings which they need, and the equipment they need at College Park. However, we felt this year the time was ripe, and it was no more than just that the horticultural interests of this State should be able to secure for the University of the horticultural buildings which have been so badly needed.

As we know, we have one of the best horticultural organizations in the United States, but our equipment is entirely inadequate, practically nothing, and this organization deserves wonderful credit for the work they have done with practically no equipment and no space. This project this year has had the backing in addition to the horticultural interests of the State, of the Tri-State Canners' Association and the Farm Bureau, the State Grange, and also the officials of the University, Dr. Pearson, Dr. Patterson, and Dr. Symons as well as the department heads. We have never before had such co-operation from all departments, and all agencies throughout the State, and I am glad to report, that the Governor has specifically recommended in his budget to the Legislature that $160,000 be appropriated by the present Legislature for a new horticultural building to be

erected at College Park. This is the first recognition this industry has had, and we trust that before another year's time has passed this building will have been erected.

This is all that I have to report at this time. Dr. Cory is here. We will go ahead with his talk, "Modifications of the Paradichlorobenzene Treatment for Peach Tree Borer."

DR. E. N. CORY: Mr. President and Gentlemen: This topic was put on the program with the intention that Mr. Siegler, of the Department of Agriculture, would discuss it, and I was merely to lead a discussion of his talk.

The situation is this: The experiments that have been conducted by the Department of Agriculture have not progressed to the point where they feel that their methods should be given any publicity whatsoever. They have, it is true, been conducting experiments for a number of years, and yet, they feel that their results are so conflicting that they are not in the shape that should be offered to the public. Therefore, I have been asked to pinch hit for him and tell you something about what I might call the trend of experiments in this direction.

For a number of years, since 1919, at College Park, we have been working on a treatment known as pine oil. Pine oil is a product of destructive distillation of pine wood, and most of the oil is used as a flotation oil; that is, it is used in the mines in the West and in the stamping mills for the flotation of fine particles of ore away from the stamping house, and then it is collected and the oil used over again and the ore collected and refined.

We find that this oil has certain properties that are apparently different from most other oils, but we also found that the material has never been standardized, and we have been unable to get chemists to work on the standardization of pine oil.

It is used first in the control of woolly aphids, using it as an emulsified oil, and we got very good results on the control of woolly aphids. Then we used the material in a number of laboratory tests to determine its exact properties if possible, then a longer series of distillations and tests of the fractions, and we found that there were in the more

volatile fractions certain properties that were decidedly toxic to insect life.

We then attempted to use it in a number of ways; among other ways, we used it against bark beetles on pine trees and found it very effective. We published this in the Horticultural Society report for 1921. In that work we combined paradichlorobenzene with the pine oil. It will take up about one-half of a gram of paradichlorobenzene per cc of the oil without it crystalizing out at normal temperatures.

The material seemed so promising when used in this way that we tested it further on peach trees and apple trees, and since 1921 we have been testing it as our other work permitted against the apple tree borer, the round head apple tree borer, and against the peach tree borer. The indications are that against apple it is going to cause injury, and therefore probably will not be available for control of the round head apple tree borer unless we can make some further applications.

But against the peach tree borer we find that in our limited tests it offers a promise of being at least a valuable adjunct to the other methods and possibly may supersede the old method of using paradichlorobenzene. We feel that if we can get a material that can be dissolved in a spray and applied in a spray it will solve a great deal of the labor difficulties, and this pine oil as a carrier seems to give promise that ultimately we will work out a method and a proper dilution that can be sprayed upon the trunks and crowns of peach trees and around the soil, and the material will give control without having to mound the earth up around the tree. The material goes down with the oil in the soil, kills the borers beneath the soil surface, and it also is effective in killing the small borers that are above. Years ago we found about a ten per cent survival of the small borers that went in above the surface of the ground. That may be high; maybe it is not more than a one or two per cent survival, but there is a certain amount of survival with those small borers. They go in and work under favorable weather conditions on a tree above ground, and as cold weather ap-

proaches some of them get down where they are protected by the soil and pass the winter.

The question of whether it is going to be adequate in all types of soil is another proposition that has to be worked out. In some types of soils the material works better than in others, and that is one of the phases that has still to be worked out, and the material has to be tried out on a much larger scale. We believe that the pine oil is a very satisfactory medium, because it apparently lacks the injurious qualities of some of the petroleum oils; or at least, it doesn't have them in quite as great a degree. Apparently pine oil is just sufficiently injurious to stimulate the cells to new growth, and that in itself is probably a good thing, because it will cause callousing over of injured tissue. We found that true in apples and we found it in peach, but where we used paradichlorobenzene with the pine oil against apple we got injury. That is supposed to be due to the fact that there is a much lighter layer of protecting cells in the case of apple than in the case of peach.

This method is being utilized in an experimental way against a number of insects, and in the future it is possible to see the use of pine oil, or Pineol, I think is one of the products, or some of the other materials of similar nature against hibernating insects, possibly the cocoons of the codling moth, on the trees; in other words, a little modification of it against quite a number of insects.

MR. WALKER: Is the pine oil expensive?

DR. CORY: Pine oil costs us about thirty cents a gallon. It can be purchased from quite a number of firms dealing in turpentine throughout the South. We got material known as Pinatex manufactured by the Pensacola Tar & Turpentine Company, Florida. In the original work we emulsified it with caustic soda and then diluted that as we felt we needed it in our work against the peach tree borer. We used it in the proportion of one part to nine parts of water, so the cost of the oil in the diluted way is very little. The cost of paradichlorobenzene is comparatively low.

MR. MILLER: About how much could you use on two or three year old trees?

DR. CORY: In our work we attempted to get a complete coverage of the trunk of the tree, and whatever ran down we counted as the soil treatment. In other words, you simply spray on the tree until you get a coverage, and apparently that is safe.

MR. J. WALTER ENGLER: Is it expected that it will be used in general spraying?

DR. CORY: No, I think not. It is a special material with a limited application.

PRESIDENT MCCAIN: The next talk on the program is, "Latest Information Concerning the Control of the Codling Moth," by Mr. B. A. Porter, Bureau of Entomology, U. S. Department of Agriculture, Washington.

MR. B. A. PORTER: Mr. President and Members of the Maryland State Horticultural Society: I haven't heard of Maryland orchards having a great deal of difficulty with codling moths. In talking it over with some of the men who were familiar with the situation they said that there was no serious difficulty experienced in controlling the codling moth except to some extent on the Eastern Shore.

You are probably familiar with the advancements that have taken place in the last few years. To begin with, the codling moth has proved to be an extremely difficult insect to control in certain sections of the west and northwest, particularly in the Grand Junction Colorado section and some of the sections of the Pacific northwest. The codling moth in these sections seems to be unusually vicious. The female moth lays an unusually large number of eggs, and the worms seem to have an unusual amount of vitality, so that with extremely heavy spraying, sometimes eight, nine, or ten applications during the season for just this one insect alone, results in not more than fifty per cent control. In a great many cases fifty per cent of the fruit is wormy in spite of ten thorough spray applications.

The middle-west had this condition in 1925 and 1926. I might say that the codling moth seems to thrive especially well in a hot, dry climate, and for two seasons in the middle-west and I guess in some of the eastern sections, conditions

during the period when the codling moth, with practically no western conditions, that is, dry and hot—did a great deal of damage in the middle-west during 1925 and 1926. Since then the weather conditions have been nearly the opposite during the critical periods of codling moth development, and there has been much less difficulty in controlling the insect.

During that period, of course, the tendency was to spray more and more and put on heavier applications of arsenate of lead, and put them on more frequently. That was just in progress when the spray residue situation developed, of which you have all heard. The Food and Drug Administration found that there were really serious amounts of arsenic present on sprayed fruit under commercial conditions. This difficulty affected the northwest and the western sections where heavy spraying had been done. That resulted in a situation which was extremely difficult. It was about impossible to reduce the amount of spraying that was done or the codling would get the rest of the crop which the growers were normally saving with extra heavy spraying.

There are two ways out of the situation. One would be to find some other way of controlling the insect, which would result in no objectionable residue, or to go ahead on our present basis and find some means of removing the poison after the season is over, after the fruit is harvested.

The second method, removing the residue, came into use and developed much more rapidly than any method of controlling the codling moth without leaving excessive residues. During the season of 1926 the impression prevailed that wiping would remove all the excess residues, and in the northwest large numbers of wiping machines were installed of various types, mechanical contrivances for taking the residue off, but before the season had progressed very far an analysis showed they weren't taking very much of the poison off. Most of it was still there. The wiping process resulted in an improved appearance. It looked as if there wasn't so much residue, but it was merely pressing it into the wax that was on the surface of the fruit.

At a conference we had last week in Washington one of the chemists, Professor Robinson, of Oregon, was present, and he sounded rather an emphatic warning against the use of wiping machinery when residues were very much in excess of the amount allowed on market fruit. He stated that when the machine was clean and fresh it would take off quite a little residue, but after it had been in operation for a short period of time the arsenate of lead would accumulate in the rolls or brushes or whatever was being used in removing the residues and then they would deposit it on apples which might otherwise have been practically clean. So that really wasn't saving the situation when actual analyses were made, although it did improve the appearance of the fruit.

To replace this process which had proved unsatisfactory, the washing process was developed, washing the fruit in hydrochloric acid. This is quite effective in removing residues. It will not take it all off, but unless the apples are very extremely covered, it will reduce it to a very safe limit. That seemed to be an impractical sort of thing, but in the past two seasons 75 to 90 per cent of the fruit in the Pacific northwest has been treated in this manner. At first there was serious question as to what this would do to be keeping quality of the fruit, but the growers' fears on that score have been set at rest. There is very little damage done to the keeping quality of the fruit where the treatment is properly used.

Some of the types of equipment have been found unsatisfactory, particularly the types which carry the fruit down to quite a considerable depth in the solution, spoken of as the submerging type. Varities with an open passage way from the calyx end right into the core of the fruit will have the acid forced under pressure into the cavity when the apple is pushed down deep in the solution, and then will not be removed by the subsequent washing. But the types of machinery in which the acid is just sprayed on the fruit, or in which the fruit floats on the surface of the acid haven't caused this difficulty.

On the other phase of the problem, the development of methods for controlling the codling moth without leaving objectionable residues, we have less definite results to report.

One of the most immediate partial solutions of the difficulty appeared to be the use of some arsenical which was not combined with lead because of the fact that although most of what you have heard about spray residues refers only to arsenic. As a matter of fact, the authorities are really as much or more concerned about the presence of lead, which is really a much more dangerous poison. Arsenic, of course, can be combined with a great many bases other than lead, but unfortunately, very extensive experiments have failed to develop any material which can replace arsenate of lead. Most of them are much less poisonous to the insect than arsenate of lead. The few which approach arsenate of lead in their poisonous effect on the insect have proved to be injurious to the foliage, and of course, relief in this way would be only partial, but it was felt that arsenicals could be used, some of them, more freely, if they could be combined with some non-poisonous base.

In the other field, the field of non-arsenicals, a great many materials have been tried. This work can be summed up by the statement that at present nothing is in sight to replace arsenate of lead. There has been a great deal of work done also with contact materials. The one about which you have heard the most probably is the summer oils. These have considerable value in codling moth control, but have also carried with them certain serious disadvantages. The more we do with the summer oil sprays, the more we are convinced that we know very little about the action of mineral oils in plant tissue. In a great many instances oils have been used with apparent safety for two or three seasons, and then with a further season's work have caused serious damage. In some cases they have injured foliage badly. In other cases they have injured the finish of the fruit. Some time the fruit has been just rough and rusted. In other cases the fruit has had the appearance of having been in storage for several months and been badly scalded.

So we are still not in a position to make any recommendations about oil sprays, although they are used to a certain extent in the Pacific northwest and the results have been extremely conflicting. Some growers feel that they are getting sufficient benefit to warrant the extra cost and the risk they are taking, and others feel just the opposite.

A number of other contact materials have been tested to more or less of an extent, and most of them are giving some indications of value, but none of them have been developed to the point where any recommendations can be made. The most promising line is the combination of some of the contact materials with oil sprays. Under these conditions the amount of oil can be very much reduced, the oil acting chiefly as a carrier of the material and to hold it on the plant after it is applied.

Among other control measures there are a number of methods, some of which are old as can be and were used in years past.

The first group of methods might be termed methods of sanitation and mechanical control. The control practices referred to under sanitation are just an application of common sense. Possibly you have heard Dr. Dozier over in Delaware refer to the observations which he has made showing the number of worms which carry over the winter in packing sheds and the number of moths which escape to the orchards from sources of that nature. I might mention one experience a grower in western Kentucky had. He was buying fruit from a number of orchards in his vicinity and packing them with his crop and furnishing all of the containers, mostly crates, for handling the fruit. Incidentally, he handled more or less fruit which was very wormy, and it stood around in these crates while it was awaiting disposal, and in the meantime, a great many worms crawled out and spun their cocoons in the crevices of the crates or baskets.

After the season was over, without realizing what he was doing, he stored some 20,000 crates in an old barn right near one of his own orchards, and in checking those over we found afterwards that five moths per crate would be a conserva-

tive estimate of the number which was carried over and emerged from this material. In other words, he turned loose something like 100,000 moths—gathered them from all over the county and turned them loose in his own orchard. There happened to be a young orchard right nearby, and before the first brood was well under way he had four to six worms in almost every apple in the trees right around this barn.

Of course, the obvious remedy for that is either store these containers in a tight packing shed, or store them where the moths cannot get back to any orchard or tree from the containers.

Besides the worms going into crates, baskets, barrels, etc., they often crawl into crevices about the packing shed, cracks in the floors and walls or timbers. A great many packing sheds, by the expenditure of a few dollars, are made tight so the moths when emerged can't get out. Of course, the majority of packing sheds are so loose, at least, in the warmer climates, that that is extremely difficult. But packing sheds are an important source of over wintering infestation and this is worth keeping in mind.

Then in the orchard there are a number of mechanical methods which have been used to more or less extent. You are all familiar with the fact that when the worms mature in the fruit they leave the fruit and go into crevices or under loose flakes of bark. By scraping all of this loose bark off it is possible to trap large numbers of worms. The materials used have been for the most part burlap, although there are a number of others that are very good. Tar building paper is a very good material. Corrugated paper will catch a great many worms, although it has to be destroyed because the worms are mostly in the corrugations.

This can be used in two ways—first, during the season when the worms go into transform and emerge as moths to produce further infestation, or second brood infestation by working these bands at intervals of ten days can be destroyed and the second brood reduced to quite an extent. Then later in the season worms that emerge from these places intending to carry over the winter. Then these wrap-

pings can be removed and destroyed and the worms destroyed with them.

Measures of this nature are not nearly so effective as spraying, and are valued chiefly in orchards that are heavily infested. I don't know to what extent your growers will be interested.

A new development in the way of banding is the chemically treated band which Mr. Siegler in our office has been working on for two seasons. The only advantage chemically treated bands have over ordinary bands is the fact that it makes it unnecessary to work them at intervals during the season when often a grower is so rushed with work that he can't get to it. I'd like to emphasize the fact that this is still in the experimental stages. Some of the materials used in the band have caused injury to the bark of the trees, and under some conditions they have proved ineffective.

You have probably all heard of the bait traps which have been used in the Pacific northwest, the materials used in them being chiefly fermenting materials, fermenting sugar juices or fruit juices. Moths seem to be attracted to these in large numbers, and surprisingly large catches have been made in the northwest. They undoubtedly reduce the infestation to some extent, but cannot be depended on to give control, or even to replace a great deal of spraying.

You have heard about the use of parasites in codling moth control. A man in southern California working with codling moths as a pest in walnuts has been doing quite a little work with the artificial rearing of one of the egg parasites of the codling moth, and the liberation of this parasite in large numbers in the orchard at the time when codling moth eggs are being laid. This particular parasite lends itself very readily to artificial manipulation. It has a very short life cycle, maturing from the egg to the adult stage under favorable conditions, and breeds on a large number of different hosts. For that reason in the laboratory it is possible to use some of the insects from stored grains, the different grain moths, as a source of eggs to rear these parasites on, and then the parasites can be liberated in the orchard at the proper time.

This again is in the experimental stage. It shows quite a little promise under some conditions.

There has been, of course, the usual revival of trap lights for codling moth control. Codling moths will collect on lights under some conditions, but lights in the orchard never have attracted enough moths to pay for their operation.

There have been earnest advocates of the use of bats in the control of the codling moth, but the real value of all these things has yet to be demonstrated. I have been giving you a list of our failures, the things that we haven't developed to the point where you can make any use of them. I think the general principle, however, of going after the early brood, the first brood, and letting up on the amount of spraying later on as Professor Cory has already recommended, is a very sound recommendation.

MR. LEE ALLEN: I would like to ask—in an orchard which is rather heavily infested, what Mr. Porter thinks as to the possibility of scraping off the bark and collecting the bark.

MR. PORTER: I can merely refer to the experience of one grower in southern Indiana who in 1926 made the public statement that out of 60,000 bushels of fruit in 1926, he couldn't find a single bushel that was perfectly clean. What he did the following winter was to go over his orchard and scrape the bark pretty thoroughly. He put a canvas on the ground and caught the bark and burned it up, because a great many of the worms are in tight cocoons in contact with the bark and will drop off with the bark and won't be injured. Of course, birds will get quite a few of those that are exposed in that way, but there will be a great many that won't be killed.

MR. LEE ALLEN: You mention the possibility of putting your crates and baskets in a room and heating them up. Do you know what temperature is necessary to kill the worms in the cocoon stage?

MR. PORTER: About 135 degrees for a period of several hours. Of course, that is a thing that most growers are not in a position to do. A suggestion is often offered that the crates be fumigated or be sprayed with an oil spray or something of that kind, but the codling moth cocoon is so

tough and tight that neither ordinary fumigation nor spraying with ordinary oils will penetrate enough to kill the worms.

MR. LEE ALLEN: What is the best time of year to band the trees?

MR. PORTER: I didn't go into the details about that. If you are going to work the bands during the summer to reduce the population for your late broods, the bands should be in place before the first worm leaves the fruit.

DR. CORY: It might be somewhere around the 15th of June to the 1st of July.

MR. PORTER: The band should remain in place and should be examined and the worms destroyed about every ten days until the 1st of September. If you have made an examination, say, the first of September, all the worms which come down after that time are going to hibernate and are not going to transform that season and cause any more trouble, so the banding can be left in place until your crop is harvested. Then the bands can be taken off and given a final working to reduce next year's population.

MR. LONG: I would like to ask if the codling moth would winter over in sod, blue grass, or anything like that in an orchard.

MR. PORTER: The evidence on that is a little confusing. If there is a lot of rough trash on the ground such as old pruning wood that is partly rotted, or the stalks of very coarse weeds, a great many of them go in there.

MR. LEE ALLEN: I'd like to ask how close it would be safe to have your packages if you were just figuring on keeping them away from the orchard.

MR. PORTER: Moths have been liberated out in the open and followed for at least a half mile before they came to rest. On the other hand, there is pretty good evidence in the orchard that moths that emerged in the orchard don't travel very far if they find, say, apple trees at once. But if moths emerge from a building way out in the open they are going to go until they find something they like. So it is best, I think, to have them closed in so they can't get away anyway.

PRESIDENT MCCAIN: Virginia, I understand, has had quite a little trouble with a very resistant brood of codling moths. Mr. Motz, could you tell us anything about the codling moth situation there?

MR. MOTZ: The codling moth the past two years has not been as severe as in previous years, but I believe that has been due to some extent to the unusual amount of rainfall which we had during the emerging period. We have been paying more attention to orchard sanitation, and I think that in instances where our program has been condemned, it has been due to filthy conditions in the orchard rather than to the spray program.

I believe in connection with orchard sanitation that in our endeavor to get new things working, getting up spray formulas, etc., we have overlooked more or less the old formulas, and one of those is orchard sanitation, and I believe that that is one of our best measures of control in addition to our spray program.

PRESIDENT MCCAIN: Mr. Miller, would you like to make any report on the status of the rate question which you have had up in West Virginia?

MR. MILLER: The hearing will be held in Martinsburg some time in February. The case has been docketed, and we are going to call on the growers to have a preliminary meeting before the hearing. It seems that under the Cook-Smith Resolution the Commission is ordered or instructed to give favorable consideration to the economic conditions surrounding agriculture and horticulture, and we hope that those who come to us from Maryland at that meeting and those from Virginia will be prepared to set up over a period of years the difficulties surrounding our business. For instance, we can show in the last ten or fifteen years different locations have been frozen out. Or, if we have hail storms or droughts, that would preclude the possibility of our making any money. All these things will have a bearing before the Commission.

They have applied this to other businesses as well as ours. They have applied it to the coal case and the rate

cargo case, and in doing so plainly said that the conditions in northern Pennsylvania and northern Ohio were so bad they had to help them out some. When we present ourselves before the hearing we want to show them the plain fact that it is a hard, uphill business, and we have got to have some relief; otherwise our competitors will take our business away from us.

Take people living in West Virginia. We can't use our own market. I live in the east end of West Virginia, and yet it costs me sixteen cents more a barrel to deliver apples in Charleston, our capital, than it does Rochester, New York. It takes fifteen cents more to deliver a barrel at another city in West Virginia than it does Rochester, New York, and they ship to New York and Pennsylvania and part of West Virginia. It takes twenty-one cents more to deliver a barrel to Louisville, Kentucky, from West Virginia, and we are next door neighbors to Kentucky, than it does the people at Rochester, and they haul through New York, Pennsylvania, and West Virginia and down into Kentucky and get there twenty cents cheaper than we do. The result is, they can still reach twenty cents further out than we can. It restricts our area of movement. I think the rate shows that Rochester can deliver a barrel of apples for four cents less in Baltimore than we can, though our orchards are in Maryland. The rates also show that they can deliver a barrel of apples for five cents less to Alexandria than the people at Hancock can.

The freight rate is only one thing. There are many other things that make it absolutely necessary that the farmer and fruit grower keep up with the procession. We can't equip our farms and our orchards with high-priced equipment that stands idle nine or ten months a year. This year we discarded the Fordson tractors because we had to run over the ground too much and they wouldn't carry heavy enough loads, and we bought a big tractor, twenty horsepower. That thing cost as much as three Fordsons. We found we couldn't let it stand idle nine or ten months a year, so we put three drivers on it and ran it 24 hours a

day, and did as much work in one month as we did in three months with the Fordson tractors running ten hours a day.

The meeting adjourned at eleven forty-five o'clock.

TUESDAY AFTERNOON

January 8, 1929

The Second Session convened at two-thirty o'clock, President McCain presiding.

PRESIDENT MCCAIN: The first talk of the afternoon is by Dr. John W. Roberts, Bureau of Plant Industry, United States Department of Agriculture, Washington.

CONTROL OF PEACH BACTERIAL SPOT

By JOHN W. ROBERTS, Senior Pathologist, and LESLIE PIERCE, Senior Scientific Aid, Office of Horticultural Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture.

Bacterial spot of the peach caused by *Bacterium pruni* has been known to plant pathologists for many years, but only within the last ten to twelve years has it become seriously destructive to the peach over extensive areas. It occurs in practically all peach sections of the eastern United States, but causes serious annual losses chiefly in sections in which the soils are light, namely, southern Illinois, southern Indiana, North Carolina and South Carolina. It is also quite destructive at times in Arkansas, Tennessee, Kentucky, the Maryland-Delaware-Virginia peninsula, and other more or less restricted sections.

For many years it has been noted that trees otherwise in a high state of vigor, except very young trees, are less susceptible to the disease than those in light soil or left in a state of neglect. Therefore pruning, cultivation, fertilization, and other good orchard practices have been recommended as control measures. Experiments have shown these to be feasible as a means of control in sections where bacterial spot is not severe and where the character of the

soil is such that improvement can be rapidly accomplished. In many sections soil improvement is slow and expensive and the disease has obtained a hold which will be hard to break. Attempts to obtain control by removing sources of infection have not been successful as yet.

In view of these things it seemed desirable to develop, if possible, a spray that would control the disease. This problem was beset with numerous difficulties which were particularly discouraging. Dormant sprays of strong Bordeaux mixture or strong lime-sulphur solution had never given any indication of control, nor had the sulphur sprays commonly used for the control of brown-rot and scab. It seemed that if a successful spray were to be developed it must be for use during the growing season, must be toxic to the bacterial organism, non-injurious to the peach, and low in price. Even with such a spray it was feared that the number of applications required for control would make the treatment too expensive. At the invitation of the Knox County (Ind.) Horticultural Society and the Purdue (Ind.) Agricultural Experiment Station, spraying experiments were begun at Vincennes, Ind., in 1925. The support and encouragement given the work by members of both these organizations is hereby gratefully acknowledged.

In the years 1925-1928 about 160 different sprays were tested. Most of them were soon discarded because they either showed no signs of control or were injurious to the peach. At the close of the 1927 season it was evident that certain sprays containing zinc as the essential ingredient were the most promising, because they had, through three seasons, shown signs of controlling the disease and had caused no injury. It was also evident that the two to three applications used in 1925, 1926 and 1927 were insufficient and that at least five would be necessary.

In 1928, therefore, the zinc sprays were tested on a larger scale than previously and the number of applications was increased. The two zinc sprays had the following formulas:

(1)	Zinc sulphate	4 lbs.
	Hydrated lime	3 lbs.
	Casein-lime	½ lb.
	Water	50 gals.
(2)	Zinc sulphate	4 lbs.
	Hydrated lime	4 lbs.
	Powdered alum (aluminum ammonium sulphate)	1½ lbs.
	Water	50 gals.

In one orchard six applications were made at intervals of about two weeks, beginning at petal fall. Care was taken to cover the fruit and the under side of leaves. The plots consisted of from 9 to 12 trees of the J. H. Hale variety, which were 7 years old and large for their age.

Throughout the season the foliage of the zinc plots was a much deeper green than that of the check trees, and the individual leaves were longer and wider as determined by measurements. The foliage of the zinc plots was also much freer from bacterial disease.

Defoliation was estimated as follows:

	Zinc plots	Check plot
June 27	1%	5%
July 10	10%	25%
July 24	15%	35%
Oct. 9	35%	75%

The normal fruit was picked and carefully examined on August 20-25 and the so-called "nubbins" or small late-maturing fruit on September 10, a difference of about two weeks.

Of the normal fruit from the zinc-casein plot, 10 per cent was sound; from the zinc-alum plot, 5 per cent was sound; from the check plot, 0.6 per cent was sound.

Of the nubbins from the zinc-casein plot, 11 per cent was sound; from the zinc-alum plot, 16 per cent was sound; from the check plot, 0.9 per cent was sound.

Of the normal fruit and nubbins together from the zinc-casein plot, 10 per cent was sound; from the zinc-alum

plot, 13 per cent was sound; from the check plot, 0.8 per cent was sound.

On a basis of merchantable and unmerchantable, slightly more than 90 per cent of the fruit from these two zinc plots was salable, and slightly more than 75 per cent from the checks was salable. The mildly and moderately infected fruits together with the sound were classed as merchantable.

A stray Elberta tree occurring among the Hales in the plot receiving the zinc-casein mixture received all the treatments for that plot; 45 per cent of the fruit was free from disease, as compared with 1¼ per cent on another stray Elberta nearby and left untreated. On the basis of merchantable and unmerchantable, however, there was little to choose between the two trees.

These results are encouraging when one considers that the last year was one of the worst if not the worst ever known with respect to losses from *Bacterium pruni.* Also, we believe that, since the fruit ripened 10 days later than usual, and since on the sprayed plots most of the infections were small and probably quite recent, the results would have been better if an additional application had been made.

All trees, including checks, had been dusted for the control of curculio, scab, and brown-rot.

No injury resulted from the six applications of zinc preparations when used alone. One tree sprayed twice with the zinc-alum mixture and arsenate of lead mixed together showed severe injury. One tree sprayed twice with the zinc-casein mixture and arsenate of lead showed no injury. The results, however, indicate that further experimentation is necessary before passing final judgment on these combinations.

Experiments in another orchard were also fairly encouraging. This orchard was composed of 4-year-old trees of J. H. Hale and Elberta on very thin soil and had been severly injured by the disease in 1927. Cankers were very abundant, some of them quite large. Infection was heavy

and was aided by a severe rain and hail storm early in June. Plots receiving five applications of zinc sprays passed the season with somewhat better foliage than plots sprayed with sulphur sprays or left unsprayed.

The crop of J. H. Hale was very light, running about 50 fruits per tree. Every fruit showed the disease, but in the zinc-casein and zinc-alum plots only 29 per cent and 41 per cent respectively, of the fruit was severely injured, as contrasted with 87 per cent and 76 per cent, respectively, from the sulphur-sprayed and check plots.

The Elberta crop was heavier, running from 100 to 150 fruits per tree. Of the fruit from the zinc-casein and zinc-alum plots, 7 per cent and 3 per cent, respectively, was sound. The sulphur and check plots produced no sound fruits. Eight per cent and 5 per cent of the fruit from the two zinc plots, respectively, was severely injured by the disease, as compared with 36 per cent for the sulphur and 45 per cent for the check plot.

Conclusions

The zinc sprays show promise, for the following reasons:

1. In experimental trials they have checked the development of peach bacterial spot.

2. They have not injured fruit, foliage, or any other part of the tree.

3. They have stimulated leaf development and possibly fruit development.

4. It is possible that the formation of new cankers may be prevented, and that this combined with the control on other parts and with the stimulation above mentioned, may cause the beneficial effects of the spraying to be cumulative, i. e., the sprays may gradually from year to year lessen infection sources and increase the resistance of the trees.

5. The ingredients are cheap and easily obtained.

On the other hand, it must be affirmed:

1. That the results are not conclusive, especially as to the control of the disease on the fruit.

2. That although the results indicate that the sprays containing lime-casein, at least, may be used with arsenate of lead, no conclusions should be made.

3. That further experimentation is necessary before the sprays are recommended for anything more than experimental use.

Recommendations

1. Keep the orchard in a high state of vigor through good cultural practices, i. e., pruning, fertilization, cultivation, control of borers, etc.

2. For those who consider the evidence sufficient to warrant spraying, the following is recommended:

(a) Apply one of the zinc sprays at two-week intervals beginning at petal fall.

(b) Five to seven applications will probably be necessary.

(c) Take care to cover the fruit and under side of leaves. In applying the zinc sprays it is necessary to use angle nozzles with small openings, moderately high pressure, at least 200 pounds, and to direct the spray upward in order that the under surface of the leaves may be thoroughly covered. The covering of the under surface of a high percentage of the leaves may be accomplished only by spraying from the center outward to the tips of the limbs. To apply the spray from the tips of the limbs toward the center of the trees results in covering only the upper surface of the foliage. Remember that all the young parts developing during the season, including fruit, leaves and twigs, may be infected and should be covered.

(d) At present, we do not recommend the use of arsenate of lead with the zinc sprays.

Preparation of the Sprays

Formulas:

(1) Zinc sulphate ..... 4 lbs.
Hydrated lime ..... 3 lbs.
Casein-lime ..... ½ lb.
Water ..... 50 gals.

(2) Zinc sulphate ..... 4 lbs.
Hydrated lime ..... 4 lbs.
Powdered alum (aluminum ammonium sulphate) .....1½ lbs.
Water ..... 50 gals.

Fill the tank nearly full. Start the engine to give agitation. Add the zinc sulphate, which, if the lumps are well broken up, will dissolve in less than five minutes. After it has dissolved, the remaining ingredients, mixed together in a small quantity of water to form a thin paste, should then be washed through the strainer into the tank. Finish filling the tank, and agitate for five minutes or more before beginning to spray. The white precipitate settles rather rapidly when there is no agitation, but is easily kept in suspension by agitation. Although the spray prepared according to formula 2 stays in suspension longer than that prepared according to formula 1, we prefer formula 1 because it gives spray which is easier to prepare and has given better results.

MR. LEE ALLEN: I'd like to ask if those you classed as merchantable would pass U. S. inspection.

DR. ROBERTS: Most of them would. Of course, you know this sort of a disease is hard to get results on, and when you get up a new spray it is pretty hard for you to know just what it is going to do over a long term of years, and it is pretty hard to tell you what it is going to do in a strange section of the country.

MR. FUNK: Where does this disease carry over?

DR. ROBERTS: In the small twigs. We have tried to fight this disease by elimination of those cankers, but so far we have not had much success. We are hoping that

this spray will help us to eliminate by covering the twigs to prevent new infection.

MR. ANDREW COHILL: I would like to ask about the particular pruning that should be used. We had this very badly and on our trees the leaves seemed to fall off. The young trees had more vitality in the lower limbs.

MR. ALLEN: It would seem to me the answer would be that the lower leaves had been out longer and had a greater chance and a longer time to be affected, that they weren't any more resistant, but had a longer period of infection than the younger ones.

DR. ROBERTS: That is very true, that frequently you have at the end of a limb a lot of leaves which have not become infected, and those that have been infected further back will drop off.

MR. COHILL: I am wondering about the pruning method that we should use from now on, for instance, in a badly affected orchard, how much cutting you should do on the trees, whether hard or light pruning.

DR. ROBERTS: It is hard to say. From the standpoint of the disease control you would think perhaps that if you knew the cankers, you could prune out the cankers in such a way that you could get rid of a great many of your infection sources. But the trouble is that the number of cankers that hold over as far as we have been able to tell from considerable work on the thing, are very few. It is very much like pear blight in that respect. If you have one nice, healthy canker you have got enough to start you off beautifully on that tree, and you are just as likely to miss that fellow as you are any of the others, and from the standpoint of getting rid of the disease by pruning, that is your trouble right there.

I can't see that anything you could do in favor of B. pruni would change your system of pruning very much.

MR. HEAPS: Do you see any hope in eliminating this disease by annual applications, ultimately controlling or eliminating the disease from badly infected orchards?

DR. ROBERTS: If by eliminating you mean taking it out entirely, perhaps not. But we do have great hopes of each year lessening it and getting it down to a place where perhaps one or two applications will suffice. There are some sections of the country where the principle injury to the fruit is through the injury to the leaves, that is to say, taking the leaves off early keeps the fruit from sizing. In fact, there are some sections where that hurts the crop more than direct injury by B. pruni to the fruit.

MR. JACQUES: Do you think climatic conditions would take care of this disease, I mean in certain years—some years it will and some years not?

DR. ROBERTS: Some years it probably will.

DR. ROBERTS: In making the No. 1 spray you have exactly the same thing to be careful with as you do in making Bordeaux Mixture, that is, you ought to have good fresh lime. Free zinc will injure just the same as in Bordeaux Mixture free copper will injure.

MR. FUNK: How expensive is zinc sulphate?

DR. ROBERTS: It costs us from five to seven cents a pound in 200 pound lots.

MR. JACQUES: Do you care to tell us the varieties most subject to it and the varieties least subject to it?

DR. RORERTS: The principal trouble that we have had has been with Hale first and foremost. In fact, in some sections I suspect that the planting of Hale is pretty largely responsible for the very heavy infection on other varieties. The next is Elberta. But I consider Hale is much more subject in places where I have seen it than Elberta. Most of the other commercial varieties with which I am familiar are quite resistant to it. I have seen Hiley and Hale growing side by side and Hale badly infected and nothing at all on Hiley. There are probably a number of local varieties growing in places that are subject to it.

MR. COHILL: Have you done any experimental work with dust?

DR. ROBERTS: We have never considered dust as promising, because we have never known any way of sticking it to

the under side of the leaves, and coating the under side of the leaves with a good coat is important in the control of this, because in the leaves the breathing pores, as some people call them (we call them stomata) are on the under side, and the bacteria get into those.

MR. COHILL: "Doesn't it do any good on top?"

DR. ROBERTS: It doesn't show any promise. For instance, this last year we used a sulphur dust with an oxidizing agent. We have not had much promise from the use of sulphur sprays.

MR. ALLEN: Dr. Roberts told me that under laboratory test zinc spray was just as toxic to the spores of brown rot as self-boiled lime sulphur. Now, if that is true and we can work out some way by which we can control this bacterium pruni and brown rot at the same time and with the same sprays, then that will be one more of those things which are almost too good to be true, and it will make a cheaper spray than even the old self-boiled that we are now using. We are going to try it in one of our own orchards where we have the disease, both bacterium pruni, brown rot, and everything else the peaches get, for a number of years.

PRESIDENT MCCAIN: The next talk on our program is by Dr. Cory, "Orchard Sanitation."

DR. E. N. CORY: Mr. President, Ladies and Gentlemen: This question of orchard sanitation is one that has features that are peculiar to each orchard situation, and on the other hand it has many things that are in common.

First, we will take up the question of fall and winter sanitation. Scrape your trees if the codling moth has been serious during the past year. We feel that this is a good practice. Ordinarily it possibly is not necessary. The codling moth in the State of Maryland as a whole probably does not take a total of over 10 per cent. It is under the rough bark that the codling moth hibernates. Dr. Headlee, in New Jersey, found that 91 per cent of the codling moth larvae spin up on the trunk and the

larger branches, and 9 per cent in pruning scars on the smaller limbs.

I have seen some trees that were ten, or twelve years old that needed scraping badly. Before that time I don't believe I have seen any that were really in need of scraping.

There are several tools that are useful for this purpose. In Maryland we have used in some cases, triangular hoes, that is, a handle set at right angles to the blade. In Delaware they have made their scrapers by fastening a piece of old disc to a handle at right angles, fastening it with a lag screw. It doesn't make much difference what sort of a scraper you use except that with that type of tool you can do a quicker job than in any other way.

Our results seem to indicate that it is not necessary to take the scrapings out of the orchard. We found that if a man scraped the trees vigorously practically all of the larvae were crushed, and a great many of them are picked up by birds and mice, and I don't believe many of them get back to hibernating quarters.

At the time that you are doing your pruning watch carefully for aphis eggs, red mite eggs, and scales, so you know the condition of your orchard. In pruning cut cleanly and remove dead, dying, injured, and split limbs.

Burn up piles of brush, and cut your orchard firewood up and move it to a place where it will be away from the orchard. Frequently piles of brush, and particularly trees that have been pulled out are left in piles near the orchard. That is a source of infestation from the bark beetles.

Next, spray thoroughly.

Cultivate to turn down scabby leaves. Your scraping and your cultivating will come in the spring. In the summer time cultivate to destroy apples stung by the curculio and to kill their pupae in the ground. Destroy or utilize completely all culls. Do not keep them standing around in the packing shed, particularly late in the season. It is a common observance that the infestation of the codling moth or Oriental peach moth is worst right around the

packing shed. Where it is possible to make the packing house tight, boxes and baskets can be kept there.

In regard to the peach orchard program: In the fall and winter use paradichlorobenzene when the air and soil and temperatures are right. Make this an annual practice. That will destroy a number of the pests of the orchard, particularly the peach tree borer, and to a less extent hibernating larvae of the Oriental peach moth.

As in the apple program, prune out dead, dying, and weak limbs. Remove weak or diseased trees and burn them. It is much better to get rid of those trees than to attempt to bring them up to a proper standard of growth. Remove and burn mummied fruit if brown rot has been serious.

As in the apple orchard program, put your picking baskets away in tight storage. In the spring spray thoroughly and early enough to kill the peach leaf curl—that means before the buds begin separating. Burn over the adjacent roadsides and fences to kill hibernating curculio and green soldier bug. Cultivate early and close to the trees to destroy Oriental fruit moth larvae and fruit in the soil and to cover them; cover deeply mummied fruit on the ground.

During the summer cultivate to bury curculio stung fruit and destroy their pupae in the ground. Utilize or destroy all culled fruit, and if brown rot is serious, pick up and destroy all dropped fruit immediately after harvesting. A cheaper and better job can be done at this time. If pays you to do these things annually, thoroughly, and at the proper time.

MR. JACQUES: You speak of spraying peaches in the spring; how about the fall?

DR. CORY: In the case of control of curl, apparently just as good results are obtained after the foliage is off any time when the weather is suitable as can be obtained early in the spring. Where you use your combination spray it is better to put it on in the spring because of the development of the red mite eggs which does not start until early in the spring,

or rather late in the winter, and better control is obtained by application in the spring. Better control is obtained apparently of scale insects, too, by spring applications.

MR. COHILL: Do you recommend carrying off the rotten apples after you have picked up the other good apples in the orchard?

DR. CORY: I don't believe that is essential in the case of apples. I believe it is good practice to get rid of all of them that are around your packing shed promptly.

PRESIDENT MCCAIN: We are all very much interested in the new developments and the stationary spray plants. We will now hear from Mr. G. S. L. Carpenter, of the American Fruit Growers, Hancock, on "The Installation and Use of Stationary Spray Systems in the East."

DR. CORY: While we are waiting for Mr. Carpenter to come in I was wondering whether Dr. Roberts won't tell the Society something about phoney disease. It is a subject of immediate interest to the people, and I am sure that a few words will be appreciated.

DR. ROBERTS: The original name of the disease was much better in some respects than phoney; the original name was pony tree. Growers in central Georgia called certain trees pony trees because they were smaller than the others. A typical poney tree is a bushy tree with darker green foliage with little sprigs of normal looking foliage coming out from the bushy part often. The growers, of course, called it poney tree because it was a small tree and the fruit is somewhat more insipid than the normal fruit, it is smaller in size and it keeps getting less and less each year.

It may start out when the tree is very young. It is not fatal to the tree, but it spreads rapidly after it gets a good start in an orchard. The distribution is limited to the State of Georgia, and it is serious in central Georgia. It apparently takes a considerable time to develop sufficiently to be a serious menace.

PRESIDENT MCCAIN: Mr. Carpenter has come in, and we will hear his talk.

THE CENTRAL SPRAY PLANT

BY G. S. L. CARPENTER, Hancock, Maryland

We installed a stationary spraying system this year on our property at Flora Dale, Pennsylvania. Two central spraying plants were utilized in an effort to reduce our insta-l lation costs. No equipment for spraying was on the property; and we, therefore, had the opportunity to select that equipment, which we felt would give the most efficient spraying at the lowest possible cost.

Efficiency—

A central spray plant enables its owner to:

Spray timely, even though ground conditions would prevent the use of portable outfits. Avoids the loss of time and efficiency, due to these ground conditions.

Avoids injury to the ground and cover crops, in the orchard, received when portable outfits are used.

Permits of the use of electric energy without the interruptions received often from gasoline power.

Provides for continuous spraying, with relief men, at critical periods.

The installation made was of the overhead type in which the pipe is suspended from the trees permitting easy access to the orchard at all times, with complete freedom for the carrying on of all operations. We selected the long system as providing the most desirable arrangement. This method requires more fittings but uses less pipe and costs less than other methods. The hose may be handled more efficiently, as not more than half of the hose used, need be dragged while spraying. It avoids confusion and the danger of missing trees is obviated.

Following our determination of the method to be employed, we decided upon the material. The National Tube Company, of Pittsburgh, Pennsylvania, recommended to us the use of a copper bearing pipe, as being comparable to

galvanized and at a lesser cost. The installation was carefully planned, selecting proper sizes of pipe and avoiding all unnecessary bends. Careful consideration was given to the locating of mains. Their length from the central spray plant was kept at a minimum, and a larger number of smaller mains were radiated from each central plant.

In addition to having the central stations as nearly equidistant as possible from all blocks served by them, all mains were run through the center of the blocks to be sprayed, so that the laterals employed might each be of minimum length.

We found that our installation cost us $30.00 per acre, which included the pumping plant, mains, and all equipment ready for operation.

The operation of our plant for the past year leads us to believe that this is a very desirable and economical method of spraying.

In regard to the durability of black steel, copper bearing steel, and galvanized steel, there seems to be little evidence available. The Bureau of Standards when asked definite questions regarding the probable life of these three types of pipe was very evasive. They said that the wearing of the pipe from the outside in the case of the black pipe was much quicker than with the copper bearing pipe, and that the injury to the galvanized pipe from the outside again depended entirely upon the spraying materials used. They further stated that they had no evidence available that would give us any information regarding the effects of spray materials on the inside of any of the three pipes that would be of any value. The companies manufacturing this pipe, however, feel that the copper bearing certainly has much to be said for it in comparison with the black pipe, and they went so far as to state that they felt it was comparable in length of life to galvanized steel pipe. The cost of the copper bearing pipe is only a slight increase over that of the black, and much less than the cost of the galvanized steel pipe.

I want to mention the possibility of variations from the two methods of spraying, that is, the long and the square.

Many deviations from those methods can be used, and they should be judged solely on the conditions governing the installation. In small acreages with corresponding small pocketbooks, it is possible on a square plan or rectangular plan to install what is known as a portable stationary spraying system. That means permanent mains and portable laterals. The cost of moving those laterals is not excessive, and in fact, shows desirable features that would probably make it very useful for certain conditions.

MR. MILLER: Were they moved between each spraying?

MR. CARPENTER: Yes. However, that simply means the moving of the entire lateral in the same row. Now, for irregular plantings that wouldn't be desirable, because the labor cost would be very greatly increased. Of course, there are other deviations from all of these methods that can be worked out, but as I stated before these depend on local conditions and should be left entirely to the judgment of the man making the installation.

MR. FUNK: What pressure are those pumps designed to give?

MR. CARPENTER: Most of those pumps are rated at 600 pound pressure, but I know that we have operated and others have operated all of them at much higher pressures with entire safety.

A stationary spraying system may be either overhead or on the ground or may be placed underneath, and again the decision must be made of the method to be employed by the conditions under which the installation will operate. It is probable in sandy soil free from stones and permitting easy burying that the underground installation might prove desirable. There are several objectional features. It is difficult to locate leaks, it is more difficult to locate the pockets which water may remain in with consequent freezing, and it is costly to bury it. However, if the advantages outweigh the disadvantages under your orchard conditions, that is the method that you should follow. Again, we have certain types of orchards which are in sod, very rocky, and where it is not necessary or possible to either cultivate or mow, and there the installation on the ground is probably

a desirable one. On the other hand, there are conditions in which it is desired to cultivate the orchard with a system of cover crops following, and there we feel that the overhead type is the most desirable.

MR. FUNK: How do the pickers like that who have to use long ladders to get around the trees?

MR. CARPENTER: I don't believe I have heard a comment about pipes interfering with picking.

MR. CARPENTER: We use very few valves of any kind in the mains or laterals, in fact, we don't use any valves except at the pump, shutting off the mains that radiate in various directions, but here we always use gate valves rather than globe valves in the mains.

PRESIDENT MCCAIN: We'd like Mr. Leatherman to come up and lead the discussion. Mr. Leatherman is President of the West Virginia Horticultural Society.

MR. E. A. LEATHERMAN: We have with us a couple of gentlemen who were real pioneers in the pipe spraying system in this section, Mr. L. P. Miller and Mr. H. W. Miller.

Mr. L. P. Miller, you were the first one to install one of these I believe. Will you just get up and tell us about it?

MR. MILLER: The pipe I used was too small. I began with three-eighths inch pipe. Some of my neighbors are spraying with one piece of pipe 2,000 feet long with a Hardy pump. They take that pipe up to spray six rows on each side, take it up and put it down in another place and use it that way. So you see, there are all kinds of ways of working the pipe system.

MR. LEE ALLEN: I am like these fellows that have been talking; I don't know one thing about it, but I would like to know how about the waste of material; or how do you manage when you finish for the day and it is going to freeze that night? Do you clean out your pipes? Another thing, if you are using lime sulphur and want to change your material, how do you make out with that in changing material from one block to another that might be included in the system? How about Bordeaux in those pipes when you change from one mixture to another?

MR. LEATHERMAN: Mr. Carpenter, will you answer the question?

MR. CARPENTER: I will answer as well as I can. You are already familiar with the system we use in which the lines radiate from two central points. You know that we have a multiplicity of mains. The amount of solution that is required to fill each of the two systems is 1,000 gallons. That is for the total system. Now, in spraying certain blocks only a portion of the mains is used, so that the loss of the material from the spraying of any one block in the draining of the pipes is not an appreciable loss, in fact, it is probably not greater than the loss from the portable units from slopping over and from the agitator stuffing boxes and leaky cylinders. They all enter into it. I believe that the loss from the stationary system is not greater than the loss from the portable.

MR. LEE ALLEN: Do you think they will stand up if you use Bordeaux as a general proposition?

MR. CARPENTER: We have no evidence to offer except that I do know of several installations that have been using Bordeaux for two years, and they report that they haven't had any injury as yet. I believe, though, that care should be exercised in the preparation of the Bordeaux, but that is a question of settling rather than corrosion in the pipes. In other words, in an improperly prepared Bordeaux it might cause some blocking.

MR. LEE ALLEN: Would you do that with Bordeaux—leave it in all night?

MR. HAWKINS: Yes, it stays in the pipes until we finish the unit—overnight and some times two or three days.

MR. LEATHERMAN: I think the point is well taken with regard to keeping your laterals close together. By keeping the laterals closer together you will find you can use a much shorter length of hose, and the friction is very much less, and furthermore, if you go very far you have got to put an extra man on that hose. Every time you do that it means that you are doubling the expense and you can soon pay for a nice investment on some pipe. That is the way we look

at it. If there is no further discussion, we will close this part of it.

PRESIDENT MCCAIN: I'd like to appoint some committees now.

AUDITING COMMITTEE

FRANK HANSON, Chairman
DWIGHT WALKER

NOMINATING COMMITTEE

J. WALTER ENGLER, Chairman
ROBERT WALKER
G. S. L. CARPENTER
ANDREW HANSON
J. A. COHILL

RESOLUTIONS COMMITTEE

LEE ALLEN, Chairman
G. RUST CANBY
H. J. WHITEFORD
JOSEPH HARRISON
W. H. LONG

The meeting adjourned at five-forty o'clock.

TUESDAY EVENING

January 8, 1929

The Third Session convened at seven twenty-five o'clock, President McCain presiding.

PRESIDENT MCCAIN: The meeting will come to order. The first speaker of the evening is Dr. W. S. Hough, Entomologist, Virginia Experiment Station, Winchester, Virginia.

SPRAY INJURY ON APPLES

By W. S. HOUGH,

Winchester Research Laboratory of the Virginia Agricultural Experiment Station

The problem of spray injury has been with us since orchard spraying began. But all orchardists can testify that there is considerable variation from season to season in the amount of injury noticeable on his fruit at picking time. After observing the various types of spraying and the resulting injuries on apples for three seasons, we began in 1925, to study the effects of our own spraying on Ben Davis apples, which appeared to us as one of the most easily russeted varieties.

Two types of injuries commonly appear on the Ben Davis apple as well as certain other varieties. At the blossom end there is a black area which we call calyx-end burning. On the side of the fruit there appears a net-like russeting. Listing our principal commercial varieties with respect to the frequency of appearance of these injuries we have:

Not very susceptible to either type of injury

Stayman, Winesap, Black Twig, Delicious, most early varieties.

Susceptible to side russeting

Ben Davis, Jonathan, King David, Grimes Golden, Yellow Newtown.

Susceptible to calyx-end burning

Ben Davis, York Imperial, King David, Duchess.

In compiling the above lists, I do not intend to convey the idea that Grimes Golden or Yellow Newtown cannot be injured at the calyx end or that the York Imperial is immune from side russeting. I have merely placed each va-

riety in the group where it is most likely to appear with respect to spray injury under our conditions.

A certain amount of russeting has been observed on unsprayed apples. Ben Davis and Grimes Golden situated in low pockets, show a tendency to russet very easily. The temperature is usually lowest in such pockets and apparently these varieties are susceptible to low temperature shock. Here fog may form or heavy dew may appear on the apples over night. If the fruit has been sprayed, the moisture from the fog or dew is sufficient to dissolve a certain amount of the lead arsenate deposit on the apples. This sets free a certain amount of arsenic in the form of soluble arsenic which in turn injures the skin of the apples.

It has been shown by a number of investigators that the hot sunshine does not decompose lead arsenate and liberate the soluble arsenic which is so injurious to the fruit. But hot weather does influence the effect of lime sulphur on the apples even as much as a month after the spray has been applied. Some think the injurious effect is due to the formation of sulphur dioxide which burns or russets the apple skin. The important fact, however, is that either large black or dark brown areas will form on the exposed side of the fruit if there has been a heavy application of lime sulphur, or a net-like russeting if the application has been moderate. We have also observed severe specking of apples following an application of Bordeaux Mixture in very warm weather. The injurious substance in Bordeaux Mixture seems to be the copper sulphate which enters the lenticles or breathing pores of the apple skin.

When lime sulphur and lead arsenate are combined in the spray tank, decomposition begins at once. A certain amount of black lead sulphide is formed and soluble arsenic increases, so that this spray combination may prove to be very injurious to the fruit. The longer the lead arsenate and lime sulphur are kept together in the spray tank the more soluble arsenic is formed and consequently the more injury will follow. It is obvious that long hauls after

filling the tank increases the chances that the spray solution will injure the fruit. Leaving the spray tank partly filled at the dinner hour, or failure to drain the tank over night or even leaving a few gallons of liquid in the tank between loads, increases the amount of soluble arsenic, and is usually followed by russeting or calyx-end injury, or both. Overspraying one part of a tree increases the amount of soluble arsenic to such an extent that injury nearly always follows on the part that has been so heavily soaked.

In our spraying experiments on a ten-acre block of Ben Davis during the past four years, we have not been able to eliminate spray injury. The addition of a casein spreader (calcium caseinate) or lime, has reduced the amount of injury resulting from the lime sulphur-lead arsenate spray, but neither of these substances can be depended upon to eliminate spray injury. Lime (hydrated or freshly slaked) at the rate of 5 pounds in 100 gallons or calcium caseinate at the rate of 1 pound in 100 gallons, were about equally effective in reducing the spray injury. Lime has been used more than the casein because it is cheaper and very easily obtained. The extent to which side russeting was reduced is as follows:

		Per cent. of fruit showing side russet	
Year	Number of sprays	Lead arsenate & lime sulphur	Lead arsenate, lime & lime sulphur
1925	4	30	17
1926	3	17	7
1927	4	22	17
1928	4	75*	45

*Estimated.

The addition of lime (5 lbs. in 100 gallons) reduced the amount of calyx-end burning as follows:

		Per cent. of fruit injured at calyx-end.	
Year	Number of sprays	Lead arsenate.	Lead arsenate, lime & lime sulphur.
1926	3	12	5
1927	4	12*	1
1928	4	23	2

*In 1927 calyx-end injury was not severe in the plot sprayed with lead arsenate. Nearly all of the apples showing injury were merely blackened at the very tips of the calyx lobes. In 1926 and 1928 a black ring developed around the calyx lobes.

During the past four years calyx-end injury has been rather light when the total rainfall in June, July and August amounted to less than eight inches. In 1925 and 1927 the rainfall for June, July and August, totaled 7.56 inches and 7.87 inches, respectively. But in 1926 a total of 14.36 inches fell during these three months and in 1928 we had 15.86 inches during the same months. Calyx-end burning was most prevalent on apples sprayed with lead arsenate in 1928 and very severe in 1926. When one remembers that soluble arsenic is formed every time moisture accumulates on the apples, it is not surprising that there should be a correlation between rainfall and blossom-end injury on sprayed apples.

Side russeting was most severe in 1928. During the month of July immediately following our spraying season, we experienced many hot days. The average maximum temperature of July, 1928, was 89.4 degrees compared to 82.2 degrees for 1927 and 86.4 degrees for 1926, and 88.8 degrees for 1925. During the past three years when trees were sprayed with lime sulphur alone, the fruit was russeted as follows: In 1928, 36%; in 1927, 10%; in 1926, 9%. It appears, therefore, that a certain relation exists between the high temperatures prevailing during the month following the regular spraying season and the amount of lime sulphur russeting on the fruit.

In 1928 there was a correlation between the pressure used in spraying during the regular spraying season and the amount of russeted fruit at picking time in October. In increasing the pressure from 200 pounds to 400 pounds the proportion of russeted fruit increased 18 per cent. At the same time the calyx-end burning increased from one-tenth of one per cent to two per cent on the lime sulphur, lime, lead arsenate spray plots.

Summary

The following suggestions are made to aid in the reduction of spray injury on fruit.

1. Use lime (a good grade of hydrated lime or freshly slaked lime) in every spray in which lead arsenate is included. In Virginia we use 2 pounds of lime for each pound of lead arsenate.

2. Add the materials to the spray tank as follows: First—the fungicide; Second—the lime; Third—the lead arsenate. Always add the lead arsenate last. In case of a long haul carry the lead arsenate in the dry powder form until you are ready to begin spraying. Then sift the lead arsenate into the tank while the agitator is running. Start spraying at once.

3. Avoid continuous soaking one part of a tree.

4. Do not use lime sulphur or Bordeaux mixture in extremely hot weather.

5. Pressures as high as 400 pounds are not safe, 300 to 325 pounds is ample.

MR. FUNK: Did you note if there was any russeting if there was no spray put on?

DR. HOUGH: This year we had the highest we have ever had. In that connection we noticed a great deal of this russeting beginning at the time the trees were in blossom. We had a big snow just before blossoming time. Immediately after that russeting was noticed running up the stem of the apple; it was very small, just a little streak. We followed that through and found that it was pretty badly russeted. The same thing happened with the Winesap.

In conclusion, we are willing to go this far in saying that this russeting can be reduced somewhat by the addition of lime where lead arsenate is used, and we also say that in adding these materials to the spray tank, whether it be lime sulphur or Bordeaux Mixture, that the fungicide should go in first, then the lime, and lastly the lead arsenate. That order always follows. In the case of long hauls it probably would be a good idea to leave the lead out until you get out there ready to start business. I was talking to Professor Robinson, of the Oregon Station just the other day, and he said they also make that recom-

mendation out there. They have had considerable trouble with russeting from fog on the Coast area.

Keep them apart as long as possible, regardless of whether you use Bordeaux Mixture or lime sulphur.

Then, in addition to the avoiding of that and the avoiding of long hauls, we found it wise not to overspray. Soaking one particular part of the tree is a thing certainly to be avoided.

Then, too, this year we began the study of the pressures, the influence of the pressures on this russeting. It was a bad thing, because we had russet here, there, and everywhere; at the same time, we found out this much. In pressures varying from 200 to 400 pounds the russeting increased 18 per cent. on the apples sprayed with 400 pounds pressure.

You spray a tree 400 or 500 pounds pressure, and that way you are going to put more on than with 200 pounds pressure.

MR. ENGLER: Is there a possibility of doing injury with the petal fall spray?

DR. HOUGH: Yes. I have always had a block in which there was no petal fall spray at all, and we get the calyx-end injury beginning with the petal spray, three weeks spray.

MR. MILLER: How about copper sulphate?

DR. HOUGH: I didn't try copper sulphate. We confined ourselves to lead sulphate.

MR. LEE ALLEN: You mention putting your arsenate in after you get there. Are there any arsenates you can put in dry directly into the tank with the agitator going? Or do you have to put in the solution?

DR. HOUGH: You mean sift it in?

Yes, that is all right. I understand that that is the prevailing recommendation in Oregon. We do it.

MR. ALLEN: If your arsenate is laid out in the right size packages it would be a comparatively simple matter to take it to the field.

DR. HOUGH: One question I'd like to know for my own information—on these stationary spray outfits how long does it take to empty your tank?

MR. MILLER: About fifteen minutes, four to six tanks an hour.

DR. HOUGH: What size tank is that?

MR. MILLER: Four barrel.

DR. HOUGH: That is about the minimum size tank. Aren't there some 800 gallons or more? How long does it take to empty those?

MR. HAWKINS: Twenty minutes to half an hour.

MR. LEATHERMAN: Fourteen minutes with a 400 gallon tank.

DR. HOUGH: Professor Robinson tells me that in speaking of the amount of lime that goes in there—as I said before, if you put too much lime in you decrease the effectiveness of the lead arsenate. That is one reason we don't use basic lead arsenate, but the addition of about two pounds of lime in 100 gallons is good for about fifteen minutes to thirty minutes. Then you may get an increase in this activity. If you have just a little bit of lime, you understand, it sets up more. You have got to keep an excess of calcium hydroxide in the solution. He says 22 pounds is good for fifteen to thirty minutes, so we recommend five pounds to six pounds in 100 gallons. When you get that out in about an hour that is twenty minutes over the length of time. Probably it is good for much longer, but it is better to be on the safe side than to set up more trouble.

MR. ENGLER: Does Bordeaux cause russeting or spray burn?

DR. HOUGH: Yes. We have had some very serious injury in an orchard right by the laboratory where Bordeaux was used. In fact, several year ago it was so serious we quit. That seemed to follow in that orchard particularly the hot weather in July. We'd get a black specking on the side of the fruit. I think that was probably due to copper. You are not exactly safe. We recommend to our

growers to cease spraying when the temperature is very hot either with lime sulphur or Bordeaux Mixture.

PRESIDENT MCCAIN: The next subject is, "The Origination, Use and Present Status of the Virginia Apple Packing and Grading Law," by Mr. F. A. Motz, Extension Horticulturist, Virginia Experiment Station, Blacksburg, Virginia.

THE ORIGINATION, USE AND PRESENT STATUS OF THE VIRGINIA APPLE GRADING AND BRANDING LAW

BY F. A. MOTZ, Extension Horticulturist,
Virginia Polytechnic Institute, Blacksburg, Virginia

Virginia's marketing problem is not unlike that of other neighboring States producing barreled apples. Scientific production has greatly increased the volume of fruit to be marketed. Scientific marketing must keep pace with scientific production if we are to avoid disaster, and scientific marketing cannot begin until we have standardized our product. Virginia, like some of her neighboring States, directed her efforts along production lines with the hope of ultimately improving the quality of the pack. In spite of these efforts the demand for barreled stock lessened and sales decreased rapidly.

Each year marketing problems became more complicated and the demand for Virginia apples rapidly decreased in the South, as well as in other domestic markets. Buyers no longer continued to come into this territory to purchase their supplies and there was little call from markets which had formerly been supplied with Virginia stock. Growers were certainly aware of this situation and apparently wondered why their product was being discriminated against. The more progressive growers became alarmed and asked that an investigation be made to determine, if possible, why there should be a curtailment of their markets and why the product shipped from Virginia was no longer in demand.

Because of these market trends of some twelve or more years ago, and realizing that the South was but one of

her market outlets and the factors which were limiting sales there would surely become operative in other markets with the same effect, a few of Virginias leading growers got together and proposed the adoption of a compulsory apple grading and packing law. This was in 1916.

In general, the growers were opposed to legislation and did not favor a compulsory packing law and so the matter was tabled with the hope that conditions would improve and that growers would put up a better pack because it was the thing to do.

Conditions, however, did not improve; in fact they seemed to get worse, so in 1922 a county fruit growers' association was formed in Frederick, the leading apple county in the State. The object of the members affiliating themselves with this association was to co-operate along lines of better production, uniform grading and packing, and uniform selling. During this year approximately 32,000 standardized barrels were State inspected, which was the first time inspection had been tried in the State.

About this time a State committee on standards was appointed to work with the interstate committee to study the common interests and to determine whether a plan of operation mutually beneficial might be developed. Grading rules or specifications were worked out and distributed through the Division of Markets.

The following year (1923) inspection rings were started. This was the first real attempt at State inspection. Experiences of the 1922 season revealed the fact that the standards were abused to some extent, and to eliminate reoccurrences arrangements were made with the Division of Markets to employ inspectors during the packing season to see that the grades were properly interpreted and carried out. This was done at a small cost, which was paid on a package basis by the growers receiving the service.

In 1923 the work was increased and approximately 69,000 barrels were inspected. This work began to attract attention from other growers over the State and they began asking questions such as:

1. Why is the sale of Virginia apples decreasing in the South?
2. Why are less apples sold there each year?
3. Why do people of the South prefer apples from other districts to those from Virginia?
4. What is the demand and comparative value of Virginia apples?
5. What are the factors, limiting sales?
6. What methods can be devised which will lead to increased sales of Virginia apples?

After studying these and similar questions they were analyzed as follows:

1. That the sucess of any business depends upon future sales and that future sales depend upon satisfied customers.
2. That the loss of Virginia barrel trade in the South could be charged directly and entirely to the poor business methods practiced by the Virginia growers.
3. That our methods of grading and packing were obsolete and unsatisfactory and did not satisfy trade demands.
4. That we were not keeping pace with the progres made by other sections in marketing methods.
5. That the market standard for a No. 1 apple had changed due to the superior technique of our western competitors.
6. That the average Virginia pack was ununiform, poorly graded and carried with it no guarantee of dependability, which, of course, resulted in loss of prestige and a decline in the sale of Virginia apples.

In order to verify these reasons and to secure correct answers to the statements just mentioned, the Extension Division, at the request of the members of the State Horticultural Society, was asked to make a thorough study of the conditions which were influencing the sale of Virginia apples, and if necessary have a representative visit these markets to gather first-hand information from the dealers, to get a definite understanding as to the factors that were

limiting the sales, and to devise means which would lead to a re-establishment of the trade relations which once existed between producer and distributor, and which would lead to increased sales of Virginia apples in Southern markets.

The survey of Southern dealers was made early in 1924 by Mr. G. S. Ralston. He interviewed some fifty or more dealers in ten or twelve of the principal consuming or distributing centers and their replies to his questions were all painfully alike. His report brought out many expressions such as

1. Low grade fruit is packed in barrels.
2. Defective fruit, misshapen fruit, very small fruit, green apples and otherwise low grade fruit is packed and labeled as No. 1.
3. Barreled fruit does not keep as well as boxed.
4. Barrels are over-faced and is not representative of the contents.
5. There is no recognized standard for Virginia apples, no uniformity of grades, the buyer does not know what he is getting unless he buys from a producer whose fruit he knows from experience.

In addition the survey revealed the fact that of all the apples handled in the South but 32% were packed in barrels while Virginia supplied but about 8% of that amount, while 5 or 10 years previous to that time Virginia supplied from 65% to 75% of all the apples handled in the South.

Following this investigation, interested growers and State agencies went after inspection with a vengence and inspection rings were formed in the principal fruit counties. Twenty-three rings were organized in thirteen counties with a sign-up of approximately one-half million barrels contracted for inspection, as against 32,000 of the first year. The method of organizing and financing the rings will not be discussed here, as it would be foolish for you to undertake the measures which we were forced

to resort to in leading up to our compulsory packing and branding law.

The 1926 crop of which you are no doubt familiar and would like to forget, was really responsible for the proposed compulsory packing bill being made a law.

During the fall of that year a few informal meetings were held, made up of men believed to be representative of the fruit industry of Virginia. The men fostering these meetings believed that the time had come when proper grading and branding of Virginia apples should be made compusory by law and that the reacton of growers from other sections of the State should be sought before attempting to carry it too far. The purpose of these meetings was to gain the opinion and advice of those attending, no plan or propaganda being offered by those in charge.

During the annual meeting of the State Horticultural Society which convened in December, the matter was presented to the Society and resolutions were passed by the unanimous vote of the membership favoring legislation requiring all closed packages of Virginia apples to be branded as prescribed by the State Department of Agriculture, and requiring apples not up to grade indicated, to be repacked or rebranded with possible cash penalties as the case demanded.

Not satisfied with the endorsement of those growers present at the meeting, the directors felt that every possible precaution should be taken and before attempting to frame any proposed legislation or to map out any definite course of procedure, that a series of public meetings should be held throughout the principal apple growing sections of the State in order that everyone might have ample time to think the question over and to speak his opinion with the assurance that it would be given careful consideration.

These meetings were held, the proposition explained and the meeting thrown open for discussion. Ballots were passed out and at the close of the meeting were taken up and the vote announced. Over 300 growers representing over 1,000,000 barrels of apples attended these meet-

ings. Of the votes cast, all but 4 were in favor of the legislation.

With this information before them, the Directors of the State Horticultural Society felt that they had been sufficiently instructed to proceed with the framing of the bill, which they did, and in due course the legislation thus proposed became the law that is now in effect.

Many of you are perhaps familiar with the law and as laws are uninteresting reading to most of us I will not take your time in discussing it. In brief the law was designed to accomplish two things; namely,

1. To require every closed package of Virginia apples to be branded according to some standard, and
2. To require the contents of each package to be of as good quality as the brand indicates.

A copy of the bill is, of course, available for those interested.

My talk so far has been confined to events leading up to the passing of the law and you are perhaps wondering when I am going to tell you about its success and present status.

Enforcement is perhaps the most important feature of any law. We certainly have sufficient laws on our statute books, but as you know some are subject to constant violation and in reality are not worth the paper they are written on. A law to be effective must have the sympathy and support of its patrons. The packing and branding law has such support and to it we attribute its success.

The law is enforced by inspectors, working under the Director of Markets, who police shipping points, packing houses and cold storage plants. The State is divided into districts with a licensed inspector in charge of each section. The district is made up of several counties and grouped so as to permit the inspector to cover his territory properly.

During the first year 1927, the inspectors examined 1,100 lots of apples. Violations were frequent, but many were found to have been made through carelessness or ignorance. There were, of course, some intentional violations, but they

were readily disposed of and as far as we know did not occur again.

We anticipated more or less trouble at first, or certainly until growers became familiar with the law, but generally speaking, the results secured during its first year of operation was even greater than the most optimistic had even dared hoped for.

We did not expect perfection the first year or possibly the first five years and knew that certain modifications and changes would be necessary as experience pointed the way. The law as it exists in Virginia is made up of two parts: (1) The law and its enforcement, and (2) The rules and regulations governing the packing. The law proper lays down the working principles. The Rules and Regulations specify in detail how these shall be carried out. The law can be changed only by legislative action. The Rules and Regulations are identical with those issued by the Federal Department, but the final authority for promulgating the rules and regulations for Virginia from year to year lies with the Commissioner of Agriculture and Immigration in consultation with the directors of the Virginia State Horticultural Society.

The chief objections which have come up within the two years that the law has been in operation have not been with the law itself, but with the rules and regulations governing the grade standards.

We feel that our standards should be identical with those of the U. S. standards. An independent set of standards has been suggested for Virginia, but for several reasons this thought has not been seriously entertained. Some years it is difficult to get proper color and prevents a brand which the fruit otherwise would permit. However, it would hardly be feasible to change the regulations from year to year depending upon weather conditions. In fact being unable to forecast weather conditions at the time the standards are determined it would be impossible to provide the flexibility of changing seasonal conditions.

The only sane way to promulgate standards, in our judgment, is to adopt rules and regulations that the aver-

age grower in an average season can follow. If insect or disease control is difficult in certain orchards or sections in certain seasons, this is unfortunate for the individual and the standards cannot be manipulated so as to permit each grower to brand his fruit as No. 1.

One of the greatest difficulties that we have to encounter in Virginia is the ability of the average grower to define intelligently the pharseology or wording of the grade terms. Just what should or should not be included in the different grades should be stated in language that any one can understand. Considerable improvement can be made in this direction and will save much of the inspectors' time in attempting to interpret the meaning which the expression tends to convey. This could be done without altering the meaning or what it is supposed to mean. During the recent session of our horticultural society meeting, resolutions were passed asking that the committee on grades and standards meet with the proper authorities in Washington for the purpose of rewriting or rewording the terms so they can be readily understood by anyone.

In reality we have had but one year's operation to report on. In 1927 with a short crop and an active demand, it did not require much courage to brand the apples what they were as there was a ready sale for everything, whether it was Fancy, or Unclassified or Drops. The past season, however, (1928) we were put to a more severe test and it is here that we look back with more or less pride to the response of our growers in meeting the issue with all fairness and respect to the law.

Here again we had some violations, but on the whole we consider it to have been a very satisfactory deal. A lot of fruit was marked "unclassified" which would have passed as No. 1, because growers were afraid to mark it as such. This procedure works a certain hardship upon the packer, but it does not misrepresent the facts to the trade.

After all we are interested primarily in the present status of the law, how it has impressed those handling Virginia apples, and how it has affected our sales. Those buying, handling and consuming our apples are the ones we

should go to for opinions and facts and so again we went to the dealers to find out if the law was accomplishing the desired results.

Funds being limited the dealers could not be interviewed personally, so the questionnaire method was used. The information received from this source was secured and compiled by the Director of Markets and I will pass it on to you in the form in which he submitted it to me.

The questionnaire was sent to dealers in the following States: Virginia, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Florida, Maryland, Pennsylvania and New York. Replies were received from 63 dealers or firms operating in 30 cities in the 10 States. Forty-three of this number reported as handlIng Virginia apples.

The questionnaire read about as follows: "We are anxious to have as definite information as possible, as to results secured by the enforcement of the Virginia Apple Grading and Marking Law, which has been effective on the 1927 and 1928 crops. Please give us your candid opinion of the improvement, if any, made in the packing and marking of our apples during the seasons mentioned."

"If you do not care to go into detail please fill in the blanks below and return as soon as possible in the enclosed self-addressed envelope."

The questions asked and the tabulation of answers are as follows:

1. Approximately how many Virginia apples (in terms of barrels) did you handle last year? Answers 682,299 barrels.
2. Approximately how many Virginia apples (in terms of barrels) did you handle this season up to date? Answers 862,915 barrels.
3. To what extent was the packing and marking improved last season compared with former years?

8 much better	1 always good
4 considerable	1 about same
3 some improvement	1 trade better satisfied
3 great improvement	1 well packed
3 much improved	1 very good
2 no difference	1 wonderful
2 improved to large extent	

some answered in terms of percentage: 5—50%; 1—30%; 1—20%; 1—15%; 1—10%.

4. To what extent is the packing and marking improved this season compared with former years?

7 much better	1 best this season I ever saw
3 very much improved	1 better than ever before
2 about the same	1 great improvement
2 better	1 about same as last year
2 to some extent	1 wonderful improvement
2 very good	1 all that could be expected
2 considerably improved	1 there is no comparison
1 noticed no difference	

some answered this question by giving percentages: 1—80%; 2—75%; 2—60%; 1—40%; 2—25%; 2—20%.

5. If improved, do you feel it is a result of the Grading and Branding Law? All but three answered "Yes". These three said they did not know.

Under remarks, the following statements were made:

3. "Your Virginia apple grading and branding law was a 'life saver' for your products, and considerably better returns to the growers. Make another progressive step now on harvesting, getting the different varieties picked and packed at the proper time; thereby making a more confident feeling for the dealer when storing, that the maximum life of the apple is before it and not behind it when going into storage for the season."

5. "Virginia State inspected apples are worth 25c to 50c a barrel more than apples marked same grade from any

other State. We are not afraid to buy Virginia State inspected apples."

6. "Our opinion, the improvement in packing brought about by law has resulted in greater demand for Virginia apples; this due to dependability of the pack. Recommend continued enforcement."

10. "We have had the best packed fruit this season that we have ever received from Virginia."

13. "The grading law is responsible for the improvement to a large extent, as shown by the fact that a great number of growers now desire to sell their crops on the tree, and leave it to the purchaser to grade and mark. However, the grading law has not only improved the quality of the pack, but it has helped the marketing end of the apple business. Sales are now being made without the quibbling and argument previously experienced—although there is a greater demand for certificate to accompany the lots sold than in previous years."

16. "In answer to your form letter we wish to say that above all things, nothing has been done to accomplish more for the Virginia apple growers, than inspection. Inspection commercializes the apple, puts it in a position to offer out something real. We offer subject to these goods passing the grade and size as sold, f. o. b. loading station, and our good trade does not hesitate to buy this way and the trade that does not want to buy under such conditions, we do not care to have any dealings with."

17. "As you know, we have several agents and our operations are for the New York domestic market, as well as thru export channels.

With respect to the effect of Virginia grading and marking law, I wish to express my own whole-hearted approval thereon. I feel that the law and its enforcement in so far as you have been able to do, has accomplished a great good in its reputation for Virginia fruit, and that Virginia growers have been benefitted thousands

of dollars directly and indirectly thru the benefits of such a law."

18. The following letter was received from a firm in Georgia: "We are in receipt of your circular of the 23rd regarding the grading and packing of Virginia apples. In answer to first two questions, we handled close to 6,000 barrels of Virginia apples last season. So far this season we have sold about 2,000 barrels, and have close to 4,000 barrels in cold storage, located in Virginia, Atlanta and Macon. For the last three years we have bought our supplies from three or four growers, who come very near complying with the grading and marking regulations. Up until this law went into effect we did not handle nearly as many barrel apples on account of their irregularity, both in sizing and grading. We could hardly get a barrel apple that would in any way compete with Western box apples and the Western shippers were putting car after car into our market, even when barrel fruit was very plentiful. The last two years though there has been a change made in the grading and packing of barrel apples, and we have been able to almost discontinue handling Western boxed fruit. There is still room for improvement, even though there has been lots done so far.

"Some growers continue merely to put their apples in barrels, without the proper grading and sizing. However, we think the best growers and shippers realize the importance of grading and sizing, and are willing to make as good a pack as possible. We have met some growers who just wished to get by, and naturally there is very little improvement in their packs, but as a whole we think that with a little more improvement, Virginia should supply the Southern States anyway with all of their apples. We know that we have been able to get our barrel business back after practically losing it, and we do not see why other markets cannot do the same thing if they get their apples packed up and sized in the right manner.

"In order to compete with Western box apples, we would suggest stressing the sizing of the fruit. That is, taking for instance a good orchard of Winesaps and packing them with only ¼-inch variation in the size in each barrel: 2-2¼-in., 2¼-2½-in., 2½-2¾-in., and if running large, 2¾ inches and up. This gives the retail merchant an opportunity of selling them by the dozen, whereas if there is more than ¼-inch in variation in size they cannot be sold this way and the merchant, before he will change his policy of selling, will handle boxed apples. It will, of course, be more expensive to pack apples in this manner, but we are satisfied in the long run they will bring much more money.

"We think that the grading and marking law has tended to make a big improvement in Virginia barrel apples, and should be continued. In fact, the law was made to be a little more strict regarding the U. S. 1 grade, we think it would be even better for the growers and everybody concerned in the long run."

Effects in Foreign Markets

A statement in reference to the effects of the Virginia law on foreign markets was received from Mr. Edwin Smith, a man as you know of considerable ability and one unusually well versed with the conditions in foreign markets. Mr. Smith writes as follows:

"Before entering into criticisms, intended solely to be constructive in nature, I want again to insure Virginia fruit growers and shippers that, since enacting the apple grading law in 1927, Virginia's apple grading and packing, as observed in foreign markets, has shown marked and constant improvement. The splendid color of this year's fruit has given great assistance to the packers' efforts in securing favorable impressions amongst the European trade as regards the ascension towards perfection of Virginia's apple output.

"I may say that, during the second season of enactment, very, very few instances have been observed where barrels have not been marked to conform with requirements. There

has been much less overfacing, both as regards color and size, so that accusations of "Dishonest Packing" and "These barrels are topped" have been fewer than last year. As a result of the law and its enforcement, it can be said that Virginia's reputation in foreign markets is most assuredly on the up-grade, while on the other hand. I doubt if anyone has actually been adversely affected by it."

I have presented the foregoing statements because they are the opinions of the men upon whom we are dependent for the disposition of our crop and are not our personal statements, even though they may be our beliefs.

In closing it may be appropriate to draw a few conclusions and in the light of our limited experience make a few suggestions.

Perhaps in looking back over our experience with the law thus far it might be well to emphasize the fact that we have not had very much experience yet, after all.

The operation of the law we feel has in general been successful. This has been made possible by the fine co-operation of the growers. A few have been contrary and indifferent, some have even tried to evade the law, but the growers as a whole have shown a wonderful response in meeting the requirements of the law.

Because of the sudden change in packing requirements and our endeavor to help growers rather than work a hardship on them, the officials have been more lenient with violators in imposing penalties than would otherwise be the case. We cannot afford or do not expect to continue this tolerance. Now that growers and dealers have had the opportunity of becoming thoroughly informed upon the requirements of the law and have an opportunity to get the necessary packing information, we expect to see fewer violations next year and a marked improvement in the pack.

The progress we have made and expect to make has not and will not depend upon the efforts of the inspectors, but upon the continued co-operation of the growers themselves.

All that the law prescribes is that "the label must tell the truth".

The law has brought about a better equalization of the large and small grower, because both are offering a product of known grade.

It has brought about improved methods in the physical handling of fruit. Several individual and few community packing houses have been constructed since the law went into effect and a number of others are being contemplated.

It has already brought about a separation of the "men" from the "boys" and is working to the advantage of the grower who recognizes market requirements and who wants to put up an honest pack.

The law has already enabled us to make some progress toward reestablishing our reputation and has attracted attention in foreign countries as well as at home.

Suggestions—

Regardless of whether you are operating under a compulsory law or not it would pay every grower to check up on himself or his pack. Make a regular practice of checking the markings, then open up a few packages and see if the contents comes up to the promise as marked upon the outside of the container. Frequently you will be surprised at the results. Inspectors urge this practice and as a rule the average packer is interested in this check-up.

See that barrels are packed tight. Rack frequently and thoroughly during the process of running and do not depend upon the press alone in making a tight pack.

Avoid rough, careless handling. They are subjected to enough of this after they leave your hands.

Use clean containers and keep them clean.

Mark or stencil your packages plainly and in an attractive manner.

We believe in our law; we feel that it has already been productive of results; and with heads up we are looking into the future with optimism and can see only a bright future before us.

We believe that the industry as a whole would be benefitted if Maryland, West Virginia and other neighboring States would join with us in attempting to place Eastern grown apples on the same plane as that of our Western com-

petitors. Although our experience as I have stated has been decidedly limited we are willing and stand ready to give you the benefit of what little we have done or accomplished, in the event that you are interested in adopting similar legislation.

MR. CARPENTER: Is it desirable to place on the market premature fruit under any conditions?

MR. MOTZ: The question has come up, repeatedly, and has been brought up by men of other sections. They claim that they are able to get better coloring on their fruit at that season of the year, and as long as there is a sale for the stuff it is pretty hard to say they can't sell it. Just how we will settle that question in Virginia I am not prepared to say.

MR. MILLER: Do they get sufficient color to pack U. S. No. 1?

MR. MOTZ: They mark it "Early Export."

MR. J. A. COHILL: I shouldn't think that your law would be considered effective if you are allowed to ship this fruit and not market it just as it actually is.

Why not mark them "Green Unclassified?"

MR. MOTZ: That is true, but at the same time, they know what the stuff is, and they continue to buy it, and as long as they will buy the stuff and pay the price for it the chances are they will continue to ship it. As they say, they actually make money on it.

MR. ALLEN: Of course, if a man wants to pack in open top baskets he can.

MR. MOTZ: If he doesn't want to put covers on them, wants to haul them in gunny sacks, all right, but if it is closed he has got to indicate what the contents of that package is.

PRESIDENT MCCAIN: I am sure this whole step by Virginia is a movement in the right direction. We know that any dealer buying a northwestern box knows it is just as standard as buying a case of tomatoes or beans or something of that sort, and we know, too, that that is not so very largely true with the eastern pack of apples. If we could get a standard pack similar to the west so the dealers would know what they are going to get when they bought it, I

believe there wouldn't be any question. It would help us out of a great deal in our marketing problems.

The meeting adjourned at nine thirty-five o'clock.

WEDNESDAY MORNING

January 9, 1929

The Fourth Session convened at nine-forty o'clock, President McCain presiding.

PRESIDENT MCCAIN: The first talk we have scheduled for this morning is, "Factors Concerned with the Successful Growing of Orchard Cover Crops," by Mr. Roland McKee, Agronomist, U. S. Department of Agriculture, Washington. Mr. McKee. (Applause.)

FACTORS CONCERNED WITH THE SUCCESSFUL GROWING OF ORCHARD COVER CROPS

BY ROLAND MCKEE

In discussing the subject of successful growing of cover crops we must of necessity give consideration not only to the growing of the crop, but also to its successful utilization. The two subjects are in a way distinct, but their relation is such that one must give consideration to the latter in discussing the former.

By cover crop as I shall use the term, I mean any crop grown specifically for the purpose of adding organic matter and fertilizing elements to the soil whether used as a surface mulch without definitely turning into the soil or as a crop to be grown and turned down by plowing or otherwise.

The crops used for this purpose divide rather logically into annuals and perennials, the biennial crops being considered with the perennials. You perhaps are more interested in annual crops than perennials and what I will have to say is more specifically applicable to such crops. I at least will discuss annual crops first and leave what I may have to say about perennials to later in the discussion.

In the use of cover crops one accomplishes the addition of humus to the soil which affects its physical condition and

also adds fertilizing elements as the organic matter decomposes through bacterial activity. For the purpose of adding fertilizing elements legumes are of greater value than non legumes by reason of their high nitrogen content and their ability to utilize nitrogen from the air and thus supplement that already in the soil. However, it is often the case that humus is the paramount consideration and then a crop that will produce a large growth is of first importance. It is also true that fertilizing elements can be purchased, but humus is too often unavailable. Thus it is of importance that we grow our cover crops to add the needed humus to our poor soils.

Under favorable soil conditions and when planting an annual crop in its normal season one will seldom experience any trouble. However, cover crops are needed most on poor soils and in the case of annuals have to be planted at a season that will insure vegetative growth at a time when it can best be used by the major or cash crop rather than at the time most favorable to the cover crop itself. For this reason it is necessary to determine the season of the year when such crop will offer least competition to the trees for the moisture and fertilizing elements of the soil, and to select from the many crops available the one best suited to make growth under such conditions. In other words, a cover crop should be selected that will grow when the tree is requiring a minimum from the soil and should be turned under and made available when the tree is making its greatest demands. One thus makes available when most needed the fertilizing value of the cover crop and produces the needed humus at a time when the tree is least active. At the time of blossoming and shortly subsequent when bud growth is active one should insure the tree a minimum of competition. This can be accomplished only by early turning down of the cover crop. Thus we arrive at the conclusion that winter annual cover crops must be turned down early in the spring which in turn means before they have had sufficient time or favorable weather conditions for making much spring growth. The spring and early summer period is for the most part an active growing period when the trees used need

favorable growing conditions. It becomes necessary then to secure growth of the winter cover crop in the early fall rather than in the spring to get the desired results.

This brings us to the point of time of planting and to the conclusion that planting of winter annuals must be done early enough in relation to the winter season to secure good fall growth and late enough in summer to avoid the rapid growth of the tree. With the summer annuals plantings should be made as early as possible and still avoid competition with the tree at its rapid growing period. With the time of planting determined what then is necessary to secure a stand at that time? It is assumed that good seed is always available and need not be considered. The crop best suited from the standpoint of making heavy growth is of major consideration and especially when unfavorable soil conditions are encountered.

Cover crops, like the cash crop that they are intended to assist produce in proportion to the degree of fertility and favorable moisture and physical conditions of the soil. For this reason when growth is poor it is necessary to add fertilizer to insure a good crop. In growing hairy vetch and other winter legumes in the Gulf Coast States it has been found essential to fertilize the cover crop with 4 or 5 hundred pounds of basic slag or superphosphate in order to insure a good stand and heavy growth. With non-legumes crop nitrogen is most essential and often the one thing needed. The fertilizing needs on different soil types vary and must be given special consideration. Unfortunately there is but limited information relative to the requirements of various crops when used for cover purposes in Maryland. However, on poor soils where growth is small, one should resort to commercial fertilizers to give the cover crop the plant food needed to produce the humus which in turn will improve the physical condition of the soil and help out the general situation.

I have not mentioned the matter of proper seed beds to insure germination and good stands as this probably is seldom the cause of failure. The only point in this connection that seems worth calling to attention is that of firming the

seed bed at time of planting if the ground is somewhat dry or the planting is done in a dry period. The use of a press wheel drill under low moisture conditions is always to be advised.

Now a few words with reference to perennial crops. The successful growing of perennial cover crops in an orchard differs from the use of annuals in that the problem of annual seeding is eliminated and the crop is only occasionally turned into the soil. However, in place of the question of time to turn into the soil which one has with the annual crops, one must decide a somewhat analogous question with reference to time of cutting and other operations that may enter into the handling of such crops. Experience in the East with perennial crops in orchards is not as general as in the Rocky Mountain and Pacific Coast States. However, it has been demonstrated that permanent grass sod can be maintained in orchards at least under certain conditions, and it is possible that some of you may be following such a practice. In utilizing a biennial crop in orchards they would have to be handled in part at least as one would handle a perennial crop. The time of cutting must be determined in relation to the time of decay and leaching of such cut material and the fertilizing needs of the tree. In the case of grass sod it is necessary to add nitrogen to insure against a deficiency of this element. In the case of legumes this is usually not necessary. When sods are plowed down, as may be advisable occasionally, the same general principles referred to in discussing the plowing down of annual crops should be observed. More information regarding the use of perennial legumes in orchards is badly needed and it is hoped may soon be available through State or Federal agencies.

A few suggestions with reference to crops may be of interest: What I may say, however, is with reference to the general characteristics and requirements of these crops rather than what is known from experience in their use as cover crops in Maryland.

Hairy vetch is recognized as the best adapted legume for a fall and winter cover in our more northern latitudes. It has the advantage of so-called summer growing plants in

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that it will not die down and occasion as much loss by leaching as in the case with cowpeas, soybeans and other summer grown crops. While hairy vetch has greater winter hardiness than other of our common legumes it will not make growth at as low a temperature as several varieties of vetch, bur clover, sour clover, etc. which are much less winter hardy. For this reason, in order to get a large growth, hairy vetch must be sown early or allowed to stand late in the spring. The percentage of hard seed in hairy vetch is sometimes as high as 50%, but the usual percentage is from 10 to 25, which with the usual rate of seeding would not be enough to account for poor stands. Fertilizing with superphosphate is the one thing that may give decided results in getting a stand and good growth of hairy vetch.

Buckwheat is recognized as a good crop for poor lands. Poor clay soil that will not produce good rye or wheat will often produce a good crop of buckwheat. It is a plant adapted to a temperature climate and probably will stand into late fall better than most southern crops such as sorghum, Sudan grass and crotalaria. It also does better on acid soils than most other crops. Grown as a cover crop it could be turned down in the fall and followed by rye if it is found that the summer crop cannot be carried through the winter without too much loss from decay and leaching. Buckwheat also has a short growing season and if sown the last of July or by the middle of August, it should make a good growth by October. It is a crop worthy of attention for poor soils where other crops have not done well.

Rape and mustard have given good results as green manure in experimental work when followed with wheat and may have some value for this purpose in connection with trucking and orcharding. These are non-legumes but make a good yield under average conditions. Rape is a cool weather plant and will stand considerable cold weather and may carry through the winter better than most summer crops, or at least may be handled with less loss from leaching during winter by reason of its later growing period. A well pre-

pared seed bed well firmed is advisable and when possible the seed should be sown with a press wheel drill.

Rye is one of our most dependable crops for poor lands and adverse conditions. It can often be used to advantage when other crops fail, and by adding organic matter when turned down will pave the way for other crops.

Crimson clover is a good winter legume where a stand can be secured easily. Failure to secure a good stand is the principal defect of this crop. Seeding in the hull with about double the weight of seed of ordinary seeding has tended to insure stands and make crimson clover more dependable.

Sweet clover is annual or biennial; the varieties most commonly used being biennial. This means that they live over winter into the second year. It does best in limestone regions and cannot be grown successfully on a really acid soil. It will often tolerate a slightly acid condition, but in the Atlantic Coast States it is usually advisable to add lime or basic slag to the soil before attempting to grow this crop. A firm seed bed is another important item in growing sweet clover. It is also desirable to be particular about getting scarified seed, as sweet clover usually has a high percentage of hard seed which if not scarified may be the cause of a thin stand.

The Austrian winter pea perhaps should be called to attention as a crop quite easy to handle in securing stands, and one that will stand winter temperatures as far north as Maryland. It is a variety of the field pea which has taken its name from the fact that it was first introduced from Austria. It will make more growth in cool weather than hairy vetch, and will rival rye in this respect. It should be tried wherever a winter annual legume is desired.

A recent introduction from Korea and known as Korean lespedeza may have value in orchard work. It is an annual legume that makes a slow growth early in the season but in later summer it produces a dense growth from 12 to 18 inches high and matures a large amount of seed and vegetable matter that may be left on the ground. At the Arlington Experiment Farm, Rosslyn, Virginia, it has produced at the rate

of 4,000 pounds of hay per acre. It is suggested for experimental trials.

Other crops available, at least for experimental trials, are sorghums, Sudan grass, soybeans, cowpeas. These and others need to be studied experimentally with a view to determining their possible production under local conditions and their suitability for fitting in with the practice necessary to follow in connection with the production of cash crops.

MR. MCKEE: I understand last year the subject of organic matter in the soil was discussed by Dr. Auchter before the meeting, and the matter of the necessity or the advisability of getting more organic matter into the soil is not an open question with you, that it is unanimous. We know in our poor soils we must have organic matter. Your main problem is that of what to use to best advantage, how to get best stand and how to get best growth at the time of year you want it. I have attempted to bring out a few of the major things so far as I know practices in general in orchard conditions exist in other parts of the country; one or two points are of major importance as I see them. Select the right crop and then make conditions right for the growing of that is the preliminary step in any greater or larger crop of that or other crop by using commercial fertilizer the same as they have been forced to do in the southwest with their hairy vetch where they have for years been growing legumes.

MR. FUNK: Isn't it often the moisture condition in the soil that prevents good growth of cover crops in the fall? Some years I can't get any cover crops at all. By lack of moisture I mean when we have a heavy crop of fruit, for instance, if the trees are running around 25 to 30 bushels of apples per tree I find it practically impossible to get any cover crop within six to eight feet beyond the outer edge of the limb.

MR. MCKEE: That is a decided fact, and you will find in old orchards with large trees that you will have the moisture factor there that sometimes will practically eliminate the possibility of growing cover crops. Then you have got to get your cover from some other source. There are places where it has gotten to be absolutely necessary to bring organic

matter from the outside, especially when they come clear over and shade the ground. The matter of growing organic matter on land adjoining and hauling it in, and the matter of buying legume hay in the market and hauling it in is a common practice, under the conditions you suggest where it is impossible to grow cover crops.

PRESIDENT MCCAIN: We will have to go on with the next subject, which is, "The Importance of the Common or Air-Cooled Storage in Marketing the Fruit Crop," by Mr. G. Rust Canby, Silver Spring, Maryland.

MR. G. RUST CANBY: Mr. President, Ladies and Gentlemen: I happen to have a storage with a capacity of about 3,000 bushels. It wasn't exactly an accident. In 1918 I purchased an orchard that was of mixed varieties. I could hardly expect at that time to get a carload of any one variety. Besides that, my location with regard to shipping facilities, railroad facilities, and my nearness to the Washington market indicated that I would have to have some sort of home storage. I had experienced a little trouble in handling the little crops from my farm, and the necessity about the home storage, of putting those apples on the market at picking time or very soon afterwards and in lots of cases sacrificing the crop due to the large shipments that were arriving at that season, and so I constructed this little storage. Now it doesn't quite meet my needs.

Home storage is a means in my case of a saving of 25 cents or nearly that—you have to deduct from that probably your tax prorated per bushel; that is a saving of 25 cents per bushel over commercial storage, I figure. I would say as a second statement that the home storage under those conditions is a necessity. It is, I consider, a real necessity as a medium of controlling the supply. I have jotted down a few notes here.

I can only attempt to discuss the common or air-cooled storage from the experience of a small grower catering to a local market. There is always a period during and immediately following the fall harvest that the market becomes glutted with apples and a great amount of fruit is often sacrificed.

The grower with a well constructed home storage can very nicely meet the conditions by packing his fruit away and feeding it to the market as it is consumed. When I say "well constructed" I have in mind chiefly well ventilated. That is the most important features I found to consider in the construction of home storage.

I don't think that the home storage idea should be overworked, because there is a natural tendency, where storage facilities are so convenient, to pack everything away. Early shipments should be sufficient to encourage consumption and to establish true value.

I find it a great convenience to have the bulk of my crop in my immediate possession, as it is much easier to fill an order for a single truck load, especially when the order is for more than one variety.

The cost of home storage is very slight as compared with the usual twenty-five cent charge for commercial storage. The storage room in my building holds 3,000 baskets of fruit. These in a commerical storage would involve an out-lay of $750 annually. It is built of concrete and should last a great many years, the only overhead being taxes and the maintenance of a packing room above.

One great advantage of the home storage is that the crop can be handled by a much smaller force, as the fruit can be stored direct from the orchard and graded and packed as shipped. This can often be done on stormy days or during a slack season.

Now, as I have said, I am interested in the construction of an additional storage, a better one, and I am here to learn from this discussion some good points.

PRESIDENT MCCAIN: Mr. L. P. Miller, will you conduct the discussion?

MR. L. P. MILLER: Before asking for any discussion by others, I am going to tell you that I come from the eastern panhandle of West Virginia, and in that entire section, which is rather an important apple growing section I don't believe there are more than ten commercial common storages. By that I mean those storages that were built specifically for storing apples in the way we use them over there among the

Miller's and out of ten storages I think eight of them, small and large, belong in the Miller family.

I think the Millers have had common storages for about forty years. My oldest brother had a storage about forty years ago built out of 2 x 8's upright rough boards on either side and filled in with sod. That was an excellent house and held about 6,000 barrels, and was thought to be a wonder for size and everything else at that time. It has since been replaced by another house.

MR. LIPPINCOTT: What do you use for insulation above the walls?

MR. MILLER: This last storage has interlocking tiles and standard refrigerator doors. For insulation we use eight inches of gravel cork.

MR. MILLER: Do you use concrete on top?

MR. MILLER: Yes.

MR. FUNK: Do the apples seem to dry much if kept over until February or March?

MR. MILLER: Maybe the reason we get along fairly well is because we don't expect too much of the storages. We sell the apples that would ordinarily pack from 2½ inches up before Christmas. With the 2½ and 2¼ inch we fight it out between exporting them along in November and December or exporting them after Christmas, or selling them to a local man who is pretty hard pressed to get apples and doesn't want to pay a dollar additional to put them in cold storage and take them out.

MR. LIPPINCOTT: Do you use forced ventilation?

MR. MILLER: No, I didn't get that done, but I will try to get something done to that effect next year.

MR. COHILL: Do you prefer concrete blocks to the wood construction?

MR. MILLER: I prefer the concrete.

MR. COHILL: How about a preferance between concrete block and tile?

MR. MILLER: I never got as good results out of that concrete block house I built as out of tile.

MR. LIPPINCOTT: Does the frost penetrate through your concrete blocks?

MR. MILLER: No.

MR. LIPPINCOTT: I'd like to ask the advantage of open crates as compared with the barrels—how do the apples keep in the open crates in comparison with the open barrels?

MR. MILLER: I believe they keep better. The difficulty is not to keep warm but to keep cool, and ventilation is the very life of it. It carries off the gases which are produced. We keep the houses open every day or every night, and it is so much easier to ventilate with open packages than closed packages. If they are shut up air tight the temperature is raised materially.

PRESIDENT MCCAIN: Our next subject is, "Factors Concerned with the Profitable Production of Strawberries and Raspberries in Maryland," by Dr. George Darrow, Pomologist, U. S. Department of Agriculture, Washington. (Applause.)

FACTORS INFLUENCING THE PROFITABLE PRODUCTION OF STRAWBERRIES AND RASPBERRIES

GEO. M. DARROW, U. S. D. A.

The profitable production of strawberries is, as with many other crops, closely correlated with yield per acre. The larger the crop the greater the income. But with the strawberry there are other conditions affecting profit than just yield. In North Carolina last year the early crop was exceedingly profitable but the main part of the crop barely paid expenses. In regions where the fields were properly mulched there was less rot, the berries carried much better, and could be sold at a profit when berries from unmulched fields could not be sold at a profit. Weeds and grass in a strawberry field cut down the grade of the berries and caused much more injury than was present on berries from clean fields. The past year also in regions where the yield per acre was high many growers lost very heavily because they did not have enough pickers to pick over their fields regularly. Over-ripe berries lowered their grade and encouraged rot in their fields. The care used in grading last year was in

some regions one of the most important if not the most important condition affecting profitable production. All these conditions are, however, more or less obvious.

It has seemed to me that a brief review of new developments in the strawberry industry during the past few years might be more helpful to you than anything else I could present. Many of the new developments affect the industry as a whole and you indirectly. Others you may be able to apply directly to your own conditions.

New Developments Abroad.

1. In Holland in recent years the growing of strawberries in cold frames has developed into an industry of considerable importance. Now there are about 500 acres under glass. An early variety, Deutch Evern, is used and the berries are marketed 4 to 6 weeks earlier than the out-of-door crop. That is, under Maryland conditions, forced berries would ripen a little earlier than the North Carolina crop. The earliest berries are shipped to England by aeroplane.
2. Recent studies of planting time in England where the berries are grown in hills and usually planted in late summer and fall, have shown the very great advantage of July and August planting over September and October planting. July and August plantings have not only given greatly increased yields the first year but the crops in succeeding years have been greater than with plants set so late that almost no growth was made till the next spring. The late-set plants acted as if their structure had been almost permanently fixed and they could not make the vigorous free growth of plants set when conditions were favorable.
3. In England also studies of the "running out" of varieties have shown great differences in strains. In one test of 13 strains of their leading sort, the Royal Sovereign, from different sources the best strain yielded *16 times* that of the poorest. In another test where one strain yielded *3 times* that of a second strain at the first crop, it had no advantage for the second crop while

runner plants propagated from the two strains yielded about the same. Still other tests have shown some strains that year after year produced over three times as much as others. It is too early yet to know to what such differences are due but to account for permanent differences it would appear that they must have serious mosaic or virus diseases in their stocks just as is the case in the southern and western parts of this country.

4. Recent studies on earthing up around the plants in the field in England have shown one reason for great differences in yields in different fields, results which are of greater importance to this country than to England. The strawberry plant grows by means of new leaves produced above the old. These leaves are borne on a very short stem but one which continually lengthens. The new main roots are produced at the base of each leaf but only when earth is drawn up to the plant. Crowns raised above the ground are subject to drying and to winter injury. When fields are kept over for a second crop it is especially important for vigorous growth that soil be thrown to the plants. Even during the first season heavy rains may so wash the soil away from plants that the fields may have a sickly appearance. Proper earthing up is one of the most important practices in this section of the country.
5. In Scotland the principal cause of root rot has been found to be (a) a specific fungus, *pythium,* and also (b) a mychorrhizal fungus which has gone wrong. It is probable that both are causes of root troubles under different conditions. Both these fungi are present in this country and we may hope for help on root troubles that are now so puzzling and often serious.
6. In Canada a little new light has been thrown on the fertilizer problem. There it was found that the strawberry grows best when there is a definite ratio of nitrogen to the mineral elements in the fertilizer. An increase of the mineral elements in proportion to the nitrogen resulted in decreased growth and production. In other words, it seems apparent that for each soil a

certain ratio of the elements of fertilizer to each other will give best results. The total amount of all elements in their proper proportion may be doubled with good results but if one element is doubled and the others not, decreased yields may result. Soils well supplied with humus are in general less affected by wrong proportions of the fertilizing elements because of the buffer action of the humus, than are light sandy soil types lacking in humus.

New Developments in this Country.

6. In New Jersey, Professor Clark has been testing the yield of strains of the Howard 17 (Premier). In his results he obtained yields as follows:

Strain	Qts. per acre	% of highest
A	3,382.5	51
B	4,661.2	70
C	5,318.5	80
D	6,661.9	100

Such differences are of great importance and corroborate the many English trials. No other way of increasing yields and profits is as easy as to plant high yielding stocks if they can be obtained. Clark suggests that the differences are due largely to differences in size and general vigor of the plants set which in turn were due to the conditions under which the plants were grown, the method of selecting plants and the time between digging and planting.

7. Both in Canada and at the Station of the United States Department of Agriculture between Baltimore and Washington the great importance of early runner production on yield has been found. For example, plants of three varieties in matted rows yielded as follows:-

Time of rooting	Howard 17 no. fruits	Klondike no. fruits	Sample no. fruits
By July 15	9.6	5.2	13.3
July 15 to Aug. 1	9.5	4.7	9.1
Aug. 1 to Sept 9	4.5	2.3	6.2

Early formed runner plants produce much the most fruit. Early runners are, however, produced by vigorous plants

set early in properly prepared soil. These results correspond to results secured in England where the runner plants are transplanted. In one test they secured the following yields.

Time reset	Qts. per acre
July	2,957
August	1,889
September	844

The September-set plants yielded less than a third of the July-set which must have been produced early in the season to have grown large enough to be reset in July.

8. Two new varieties which are being tested out for this region are U. S. D. A. numbers 659 and 655. Both are crosses of Howard 17 and Missionary. No. 659 has been sent out to be tested as a substitute for Missionary. Besides being healthier and firmer it is much brighter colored and in tests by the National Preservers' Association has been found to be well adapted to preserving, that is, the preservers wish it grown for their use. No. 655 is slightly later, darker and larger than No. 659 and compares with Howard 17. It is earlier than Howard 17 under some conditions, about as healthy in foliage, a more vigorous plant maker, firmer and a little darker in fruit. If these sorts produce well in 1929 they are to be named and introduced.

   Some new varieties still under number at the New York Experiment Station appear especially promising here in Maryland and should be thoroughly tested as soon as introduced.

9. New light on why varieties succeed in some sections and not in others has been found during the past year. The Howard 17 was about 10 days later than Missionary in North Carolina in 1928, while here their season was about the same with Howard 17 usually earlier. In a test of over 100 varieties at Willard, N. C., the growth of the different sorts was most striking, some making a quick early growth and were in blossom before others had started growth. From results there and from tests in Washington it became evident that different varieties are characteristic in their response both to the length

of the daily light period and to temperature, and that these responses are of particular importance in the South. There the Klondike and Missionary varieties make a rapid growth in winter and early spring when the days are short and temperatures low while other sorts make feeble or no growth. New varieties for that part of the United States must possess similar characteristics. In Maryland also new varieties must be able to grow vigorously under the length of the daily light period and the temperatures that are characteristic of the spring season here.

10. In recent years growers in North Carolina and to some extent in Virginia have been using geese in strawberry fields to eat the grass. This practice has become quite widespread and it apparently has much to commend it in regions where crab and other grasses are bad weeds. The fields are fenced with low woven wire, several geese being kept to each acre.
11. In regions such as Maryland freezing and thawing often damage fields seriously by breaking the roots. Under such conditions a mulch is needed to keep the berries clean, to make a better shipping berry, to keep the soil from washing and to keep down weeds in the rows, and the use of oats sown in the middles may sometimes be profitable. This practice is an old one but recent tests in Michigan and here indicate that it may often be useful. The oats are sowed thickly about September 1 in the middle and reach a height of from 1 to 2 feet by freezing weather. If spring oats are sowed they are killed during the winter and form a mulch in the middles and along the plants next the middles. Because the oats use much soil moisture in the fall when the strawberry plants need it and when the rainfall is least it should be well to test this practice several years before using it over a large acreage.
12. The greater use of auto trucks is giving a much wider distribution of the crop. In 1928, hundreds of trucks carried berries from North Carolina points to markets as far North as New York. As the auto truck service

has grown more loads are going directly from the producing section to the smaller Cities. This wider distribution tends to absorb larger quantities of berries with less danger of gluts in the markets. Growers can also utilize the truck service to bring back supplies from the cities.

13. The freezing of berries has been practiced to some extent for 25 years but during the past few years has developed very rapidly. For the past two years over 100,000 barrels, the equivalent of over 600,000 bushel crates and worth nearly $5,000,000, were packed. Preservers have found frozen storage the best way to avoid gluts in their work. They can freeze the berries and work them up the year through or as the demand calls for them. Moreover, preserves made from berries frozen-stored for 10 months are much better in taste and appearance and thus more wholesome than preserves made up at the fruiting season and stored as preserves.

In 1928, many carloads of berries were packed in individual containers and in 5-gallon cans in the Pacific Northwest. These are being marketed this winter in the larger cities for home use much as ice cream and oysters are handled. Such berries can be used for all purposes for which fresh berries are used.

To fully appreciate the possibilities of this method of handling strawberries, I hope each grower can put up a few 5-gallon cans of his strawberries, using about 25 pounds of fresh berries and 12½ pounds of sugar mixed together and placed promptly in a cold storage room at a temperature of 15° F to 20° F. After December 15 a can may be taken home and kept out of doors until the berries are eaten. You will want to eat them in ice cream, as sauce, in shortcakes, and make up fresh preserves just as you use the fresh berries. You will yourself use a lot of your own crop if you once start this.

Much of the latter part of the crop, if of good size, can be frozen-stored. Usually the latter part of the

crop consists of the best flavored berries as the temperatures are higher and there is more sunshine.

14. The capping or hulling machine recently developed in Maryland should make possible the greater development of the frozen storage of strawberries with less handling of the berries and with the possibility of handling more berries in a shorter period of time.
15. In Louisiana, several developments have recently taken place. The "crimp" or "dwarf" trouble common in the South and known as far north as Maryland has been found to be a "mosaic" or virus disease spread by aphis as are similar diseases or potato and other plants. The use of sulphur dust for controlling red spider on the strawberry has become common there. It is mixed with 10 to 20% of hydrated lime and applied at the rate of 30 to 40 pounds per acre on their single rows. It is most effective at temperatures between 70° and 90° F.

    In Louisiana, spraying with Bordeaux, 4-4-50, to control leaf diseases has also become common practice, and is the only section where spraying for leaf spots is practiced. To affect the profitable production of strawberries a practice should enable a grower to produce berries cheaper or to get more for his berries, and some of the new developments listed seem worth considering from this viewpoint.

Raspberry Production.

The most important condition affecting black raspberry production in the raspberry section of Western Maryland is the absence of virus diseases from their fields though they may even be found on the wild plants near Washington. The healthy fields in the Hagerstown region contrasts with the considerable percentage in other raspberry sections of eastern United States. The virus diseases cause serious losses, often making raspberry growing unprofitable, and it is especially important that infected plants be kept out of the district.

In Maryland the red variety commonly grown is the Ranere (St. Regis). It produces a berry of small to medium size and of only fair flavor. The plant is, however, healthy and

grows freely in the sandy soils and the climate of the Coastal region. In general, varieties originating in New York or eastern Canada have not succeeded in Maryland. The Latham variety, from Minnesota, however, succeeds well under Maryland conditions. It is very productive and its berries are large. When plants not affected with virus diseases are secured it is a profitable sort to grow. *Because of the virus diseases it is not considered advisable to grow red raspberries near the black sorts.*

A survey of Management Methods in Michigan raspberry fields has brought out many of the reasons for the profitable production of raspberries there. Heavy yields of black raspberries were secured when there was a good stand of plants, when there were 3 to 4 canes per plant and when the planting distance was 8 x 3 or 4 feet. Raspberry soils must have a low water table for without deep rooting the growth and yield were seriously limited and the plants short lived. The average depths to free water in productive soils were from 17 inches for the highest readings and 45 inches for the lowest with a working level of 14 inches. In "poor" soils the average depths to free water were 11 inches for the highest and 34 inches for the lowest reading and a working level of the roots of only 7 inches.

The factor of greatest importance in determining profitable production was the yield per acre. Deep rooting, freedom from disease, good stands, 3 to 4 canes per plant and a planting distance not greater than 8 x 3 or 4 feet were important. In the Michigan surveys both the least and the most productive plantations were unfertilized. Shallow clean cultivation was found to influence production favorably. Too much thinning of large strong canes of black raspberries at pruning time with a resulting reduction in yield was common. Heading the laterals to 7 to 10 inches in the winter was usual and apparently good practice. Light heading back of red raspberry canes resulted in increased yields but no thinning of canes or pinching back was advised. Larger yields were obtained from large canes than from small canes.

In all regions except Maryland in eastern United States black raspberries are grown without staking, the canes being topped when 18" to 2½' high to keep them erect. The consequent reduction in cost of production may well be considered by Maryland growers.

MR. HENRICKSON: Have you had any experience with the Everbearing?

DR. DARROW: It is the most common in Maryland now. When you have good moisture conditions through the summer you get a pretty good yield in the fall and that makes it worth while. But even then I doubt if it will yield half and usually not a third of what that Latham does, taking the two crops together.

Another thing, red raspberry varieties from the northwest are not hardy here; even varieties grown and originated as far north at Ottawa, Canada, are not hardy here. But the varieties that have been originated in the west, in Minnesota, are hardy here. That is the general experience right straight through. And the new varieties from New York State—there are some splendid new varieties, some of them better quality than the Latham and as productive up there. But they should be tested down here. Our open winters are too severe and they are likely to be killed.

MR. HARRISON: What do you think of that new Van Fleet raspberry?

DR. DARROW: It is a tremendous grower and very productive of medium sized berries. Its great field is the southern United States. At the present time there is no variety that will succeed in the south except that. Some years it is very fine quality and some years it is not as good. Generally, for commercial planting here the Latham is best, but where you have got a chance for a late market the Van Fleet comes in later with the blackberry and not with the ordinary raspberry at all.

MR. MOORE: In setting a new strawberry bed, which do you consider better, planting on a slight mound, or level?

DR. DARROW: That would depend on your drainage. The only reason for planting on a mound is because of the drainage. The washing of your soil is going to be a good

deal more where you have mounded up, and that earthing up practice is going to be harder when you have got mounds.

PRESIDENT MCCAIN: We will have the report of the Resolutions Committee, Mr. Allen, Chairman.

MR. LEE ALLEN: Mr. President and Members: Inasmuch as we have only three resolutions I think it might be well to act on them separately. I will state right at the beginning that the report of the Resolutions Committee is favorable on all of them.

Resolution No. 1: "Large quantities of bananas are consumed in this country. These are all imported and came in duty free. We feel that this fruit comes in direct competition with our apples and has a detrimental effect on the price of same.

"Therefore, be it resolved, that we ask our Senators and Representatives in Congress to use their influence in active support of any plan designed to place a tariff on bananas, thus giving our industry this measure of protection."

It was voted on motion made by Mr. Miller, and duly seconded, that the resolution be adopted.

MR. ALLEN: Resolution No. 2: "We realize the importance of proper grading and packing to the success of the apple industry of Maryland, and have noted the apparently beneficial results of grading and packing laws in adjoining States.

"Therefore, be it resolved, that we request our Executive Committee to study further the results of these laws in the States with a view to determining the kind of law best suited to the needs of the Maryland apple industry, and be it further

"Resolved, that they be requested (1) to act promptly if in their opinion enough time remains to formulate plans and take action at the present session of the Maryland Legislature; or (2) to present a result of their study and their recommendations to the members of this Society at its next annual meeting."

It was voted on motion made by Mr. Funk and duly seconded, that the resolution be adopted.

MR. ALLEN: Resolution No. 3: "We, the members of the Mid-State Horticultural Society, recognize in Dr. E. C.

Auchter an able horticulturist, an attractive gentlemen, and a true friend.

"We feel grateful for the distinguished service he has rendered to the fruit growers of this State. We are profoundly sorry to lose him as full time horticulturist for the University of Maryland and the Maryland fruit growers, but wish to express our appreciation of the fact that in the face of tremendous responsibilities in his new work he has consented to continue as Head of the Department of Horticulture in Maryland on a part-time basis.

"Therefore, be it resolved, that this Society request our University officials to leave nothing undone that they can do to have Dr. Auchter maintain his connection with the University on this basis unless at some future time circumstances warrant him in returning to Maryland more fully."

It was voted on motion made by Mr. Hoops, and duly seconded, that the resolution be adopted.

Resolution No. 4:

WHEREAS, within the past year, a Divine Providence has called into rest, two of our members:—

SENATOR ORLANDO HARRISON,
DOCTOR J. E. PITZNOGLE.

"Be it resolved, that in the passing of these estimable men, the Society has suffered a deep loss, and their advice and enthusiasm has been and will be missed by the Society. Not only has the Society lost two staunch supporters, but the fruit industry of Maryland has lost two true pioneers.

"Be it further resolved, that these resolutions be included in the records of the Maryland State Horticultural Society, and that a copy be sent to the families, with whom we share this loss."

PRESIDENT MCCAIN: We will now have the report of the Auditing Committee.

MR. HANSON: We have examined the books of the Secretary and Treasurer and found them correct.

PRESIDENT MCCAIN: The next is the report of the Nominating Committee.

MR. ENGLER: We have enlarged the Executive Committee somewhat with the idea of covering every fruit unit or sec-

tion throughout the State. You noticed in the President's report yesterday a number of things that had been suggested and started in during the present year, and a few of those things haven't been entirely closed up, and we felt it wise under these conditions to ask the present officers to carry over for one year, and our report is as follows:

E. D. McCAIN, President
ALBERT ALLEN, Vice-President
G. RUST CANBY, Scretary-Treasurer
A. F. VIERHELLER, Assistant Secretary-Treasurer

Executive Committee

G. S. L. CARPENTER	LEE ALLEN
R. R. WALKER	HALE HARRISON
J. A. COHILL	A. L. TOWSON
J. P. BURDETT	J. KEEFER FUNK
FRANK HANSON	DWIGHT WALKER
HENRY WHITEFORD	FRED SLOAN
J. WALTER ENGLER	R. H. STUBBS

MR. LEE ALLEN: I move the report of the Nominating Committee be adopted as read.

The motion was duly seconded and carried unanimously.

PRESIDENT McCAIN: The next meeting will be this evening at seventy-thirty.

The meeting adjourned at twelve o'clock.

WEDNESDAY EVENING
January 9, 1929

The fifth Session convened at seven-forty o'clock, President McCain presiding.

PRESIDENT McCAIN: The meeting will please come to order. I'd like to announce before starting the meeting tonight that Mr. H. J. Whiteford has been selected to represent this Society in the Directorate of the Farm Bureau for the coming year.

We will now hear Dr. Auchter on, "Peach Orchard Fertilization and Soil Management."

A PRELIMINARY REPORT ON PEACH FERTILIZER EXPERIMENTS IN MARYLAND

BY E. C. AUCHTER, AND A. LEE SCHRADER,

University of Maryland, College Park, Maryland

Experiments in peach orchard fertilization were started by the University of Maryland in the Spring of 1922. One experiment was located in the central part of the State on a rather heavy red clay loam soil at Mount Airy and two in the southern part of the Eastern Shore at Salisbury and Berlin. Since the West Virginia and Delaware experiments adjoining Maryland had clearly shown the value of a quickly available nitrogen carrier, it seemed unnecessary to lay out a large number of plots and conduct extensive experiments. Consequently, the tests were arranged as combined demonstrational experimental plots. The plots in the Mount Airy and Salisbury orchards consisted of ten trees each, while 20 trees per plot were used in the Berlin test. In most cases the rows adjoined. The ground was practically level in each orchard and the soil appeared very uniform in all plots.

Berlin Experiment

Table I presents a summary of the results secured in the Berlin experiments. Nitrogen, either alone or in combination with phosphorous, caused a significant increase in trunk circumference, terminal growth and yield per tree during the five-year period. (Since frost destroyed most of the crop of 1925, yields for this year are not included). Neither phosphorus nor potassium when used alone or in combination with one another caused an increase over the check. In fact a slight decrease occurred in this orchard when these elements were used alone, as found by Alderman in West Virginia, but this may be due to a slight cross feeding of the check plot, which was located between two nitrogen plots. The difference in response secured from nitrogen in comparison to that secured from phosphorus or potassium was emphasized during the last two years of the experiments, as shown in the last column of the table. Considering

the average for the five years, neither carrier of nitrogen seemed superior to the other as regards total growth and yield. The time of most rapid growth and the coloring of fruit were somewhat different in the two plots, however, and the first year's results secured from these two carriers were quite different. These are presented in Table IV.

TABLE I

Effect of Fertilizer Treatments on Trunk Growth, Terminal Growth and Yield of Carman Peach Trees, 10 Years Old in 1922. Sandy Loam Soil. (Berlin, Maryland.

Treatment	Total Increase in Trunk Cir. per Tree in Inches 1922-1928	2-Year Average Length Terminal Growth Per Tree in Inches 1927-1928	Total Yield Per Tree in Bushels 1923-24-26-27-28	Total Yield in Bushels Per Tree in 1927-1928
Nitrate of Soda	8.91	18.8	17.93	5.27
Nitrate + Lime	8.84	17.9	17.97	5.35
Ammonium Sulphate	8.74	19.7	18.35	5.70
Ammonium Sulphate + Lime	8.45	17.3	17.79	5.81
N + P	8.29	18.2	18.96	5.67
P	5.57	7.3	11.13	1.57
K	5.68	7.4	13.79	1.92
P + K	5.60	7.1	12.62	1.65
Check	6.55	11.4	14.39	3.72

Fertilizer Applications in Pounds Per Tree

Materials	1922	1923	1924	1925	1926	1927	1928
Nitrate of Soda	1.5	1.5	2.0	3.0	4.0	5	5
Ammonium Sulphate	1.12	1.12	1.5	2.25	3.0	3.75	3.75
Lime	10.00	10.00	10.0	0.0	0.0	0.0	0.0
Acid Phosphate	2½	2½	3	5	5	4	5
Muriate of Potash	1½	1½	2	3	3	3	3

Salisbury Experiment

In Table II are presented the results secured at the Salisbury orchard. Here again, nitrogen, either alone or in combination, caused an increase in trunk circumference, terminal growth, and yield of fruit as compared to the other fertilizers and to the check. As in Berlin results, phosphorus and potassium either alone or in combination did not appear to have any beneficial effects. In this orchard

also, either nitrogen carrier seemed to be equally valuable when the results of *total* growth and yield during the five years were averaged. As in the Berlin orchard, lime, in addition to the different nitrogen carriers had no effect in this orchard. The comparative effects of these two carriers during the first year are given in Table IV. The check plots in this orchard as well as in the Berlin orchard were located between two nitrogen plots and a slight amount of cross feeding has been noted especially in the last two years. This no doubt explains why they appear somewhat better than the phosphorus and potassium rows. Unfertilized rows in the orchard adjoining these experiments were from ten to fifteen per cent poorer in growth and yield than our checks.

TABLE II

Effect of Fertilizer Treatments on Trunk Growth, Terminal Growth and Yield of Belle of Georgia Peach Trees, Six Years Old in 1922, Sandy Loam Soil. (Salisbury, Maryland).

Treatment	Average Increase in Trunk Cir. in Inches 1922 to 1927	5-Year Average Length Terminal Growth in Inches 1923-1927	Total Yield Per Tree in Bushels 1923-24-26-27
Nitrate of Soda	8.73	18.48	16.60 ± 0.555
Nitrate + Lime	9.40	18.88	17.17 ± 0.519
Ammonium Sulphate	9.60	18.32	18.63 ± 0.651
Ammonium Sulphate + Lime	9 02	18.36	17.14 ± 0.578
N + P + K	8.92	19.16	14.95 ± 0.303
N + P	10.25	17.36	18.32 ± 0.444
P	6.88	12.36	12.03 ± 0.337
K	7.12	12.72	12.83 ± 0.701
P + K	6.57	12.32	14.46 ± 2.14
Check	7.70	15.00	13.12 + 0.357

Applications in Pounds Per Tree

Materials	1922	1923	1924	1925	1926	1927	1928
Nitrate of Soda	1.5	1.5	2.0	3.0	4.0	5	5
Ammonium Sulphate	1.12	1.12	1.5	2.25	3.0	3.75	3.75
Lime	5.0	5.0	10.0	0.0	0.0	0.0	0.0
Acid Phosphate	2½	2½	3	5	5	5	6
Muriate of Potash	1¼	1½	2	3	3	3	3

Mount Airy Experiment

Results secured in the Mount Airy orchard are shown in Table III. In this orchard, phosphorus and potassium were not applied singly, but either in combination with nitrogen, or with each other and nitrogen, making a complete fertilizer. In this experiment the plot receiving the normal amount of nitrogen as nitrate of soda has been used as the check. It will be noted that the addition of lime to the nitrate plot apparently did not affect growth or production. Where double amounts of nitrate of soda were used per tree, there could occasionally be noted a slight toxic effect during the last three seasons, and the trees did not grow quite as well as where the normal amounts were used. This can be noted in the table where the figures for trunk increase and terminal growth are recorded. Yields from these trees have been very satisfactory, however, and have equalled those from other nitrogen plots.

TABLE III

Effect of Fertilizer Treatments on Trunk Growth, Terminal Growth and Yield of Elberta Peach Trees, Planted in 1922. Heavy Red Clay Loam. (Mt. Airy, Maryland).

Treatment	Total Increase Per Tree in Trunk Cir. in Inches 1922 to 1927	3-Year Average Length Terminal Growth in Inches 1925-26-27	Total Yield Per Tree (Bushels) 1927-1928
Nitrate — single	14.72	17.6	7.28 ± 0.370
Nitrate + Lime	14.35	17.0	7.44 ± 0.704
Nitrate—Double Amounts	12.62	14.2	6.86 ± 0.287
Ammonium Sulphate —single	13.38	17.3	6.09 ± 0.299
Ammonium Sulphate + Lime	10.16	14.1	2.04 ± 0.202
Ammonium Sulphate —Double	13.31	16.2	6.07 ± 0.442
N + P + K	15.19	17.3	12.14 ± 0.441
N + P	14.51	18.3	7.03 ± 0.285
N + K	14.36	16.6	9.44 ± 0.398

Applications in Pounds Per Tree

Materials	1922	1923	1924	1925	1926	1927	1928
Nitrate or soda, single	0.25	0.25	0.50	1.5	4.0	5.0	5.0
Ammonium Sulphate	0.25	0.25	0.375	1.125	3.0	3.75	3.75
Lime	2.00	2.00	0.0	0.0	0.0	0.0	0.0
Acid Phosphate	0.5	0.5	0.75	1.5	4.0	4.0	4.0
Muriate of Potash	0.125	0.25	0.50	1.0	2.0	2.5	3.0

Ammonium Sulphate-Lime Injury

An unexpected injury occurred to those trees which received applications of both lime and ammonium sulphate. The trees in this plot grew poorly, the leaves were small, narrow, and mottled with reddish areas, comparatively few fruit buds were formed and relatively small crops of fruit were produced. This condition has persisted for seven years and the trees still appear weak and can be easily distinguished. Various explanations of this unusual and unexpected injury have been suggested, but no special one will be presented at this time. It will be noted that this injury did not occur when these applications were made in other orchards, which were older and bearing. The lime and ammonium sulphate were both applied the same day. It is quite probable that this injury would not have occurred if an interval of a week or two had elapsed between the time of the applications, but such injury did not occur in the older orchards where both materials were applied at the same time. Possibly the amounts applied were too large for these young one-year-old trees. Additional studies on this question are now under way. Ammonium sulphate without lime resulted in approximately as much growth and yield as nitrate of soda without lime.

Influence of Nitrogen, Phosphorus and Potassium

Contrary to the results secured in the Berlin and Salisbury orchards and to those secured at many other experiment stations, when potassium was added in addition to nitrogen, the yields were much larger than where nitrogen only was applied. This increase was not produced when phosphorus was added to nitrogen only, but phosphorus was beneficial when applied with both nitrogen and potassium. The trees, fertilized with all three elements had larger trunks and gradually became larger trees although the average length of terminal growth appeared to be about the same. These trees appeared to have more lateral growths and the laterals appeared to be more completely set with fruit buds than in the case of trees fertilized with nitrogen

only. Foliage, also, appeared slightly larger and darker green in color.

Since these results are so contrary to those found by most investigators, and since the results are only for the first crops of young trees, they should be considered as preliminary. Future crops and yield records may tell a different story. More extensive experiments, using different amounts and carriers of potash are now in progress at the Maryland Station.

First Year's Effect of Nitrate of Soda and Ammonium Sulphate

The first year's effects of the different nitrogen carriers on tree growth and yield are shown in Table IV. Fertilizers were applied in the spring of 1922. Trunk measurements were made in the spring of 1922 before the fertilizers were applied and again in the winter of 1922 after the season's growth was completed. Yield records were secured in 1923.

TABLE IV

First Year's Growth and Fruiting of Peach Trees Following Applications of Nitrate of Soda and Ammonium Sulphate.

Treatment	Berlin Orchard — Carman Variety 10 years old in 1922		Salisbury Orchard — Belle of Georgia Variety 7 years old in 1922	
	Increase in Trunk Cir. in Inches Per Tree	Yield in Bushels per Tree Following One Year's Growth	Increase in Trunk Cir. in Inches Per Tree	Yield in Bushels Per Tree Following One Year's Growth
	Fall of 1922	1923	Fall of 1922	1923
Nitrate of Soda	1.27±0.121	3.32±0.231	2.00±0.150	6.09±0.298
Nitrate + Lime	.805± .055	1.31±0.104	1.66±0.108	4.28±0.264
Ammonium Sulphate	1.52± .122	2.67±0.230	2.26±0.100	6.68±0.271
Ammonium Sulphate + Lime	.99± .086	1.41±0.158	1.93± .098	4.53± .336
Check	.79± .130	1.21±0.198	1.70± .092	4.72±0.298

In both of these orchards which were low to medium in vigor at the start of the experiment, nitrate of soda, during the first year, resulted in a greater tree growth as measured by trunk circumference than did ammonium sulphate. As a result of the greater growth, more bearing wood and more fruit buds were formed and larger yields per tree were secured the following year. All of these differences were significant except the trunk measurements in the Salisbury orchard.

Apparently the nitrate of soda was available earlier in the spring than ammonium sulphate and greater growth and more fruit buds resulted during the first year. These results with peaches were similar to those with apples, reported by the authors in previous meetings of this society. After the first year, however, when the trees apparently accumulated a reserve of nitrogen, no difference in total growth or yield could be noted between the two carriers as shown in Table I and II. Probably these differences would not be noted even during the first year if the trees were fairly vigorous at the start. It was noted, however, that those trees fertilized with ammonium sulphate were making more vigorous growth in mid-summer than were the trees fertilized with nitrate of soda. The fruit also seemed to be slightly later in ripening and coloring than that from the nitrated trees.

Effect of Nitrogen on Color and Maturity of Fruit

Trees receiving nitrogen produced more wood growth and more and larger leaves than the no-nitrogen trees. As a result, fruit from the nitrogen trees matured from three days to a week later, depending upon the season, than that from the check or phosphorus and potassium plots. Thus the largest pickings of fruit from the no-nitrogen plots occurred a few days ahead of the largest pickings from the nitrogen plots. The fruit on the nitrogen plots, while not quite so high in color as that from the no-nitrogen plots, became satisfactory in color if left on the tree until of equal maturity with that of the no-nitrogen plots at picking time.

Storage and shipping experiments are now being conducted with fruits from the different plots.

Time of Application

Additional plots at Salisbury were conducted to study the effect upon growth and yield of applying nitrate of soda at different times of the year. Accordingly, plots were fertilized each year at different times for six years. One plot received its nitrogen in the dormant stage or just as the buds were swelling, one at petal fall, one after the June drop, one July first, one August first, and one September first. Although all plots did fairly well, those receiving their application in the dormant season made a little better growth and produced about fifteen per cent more fruit than the others. The petal fall application was nearly as good, but the later applications did not produce quite as desirable results.

MR. HOOPES: I want to know whether you have anything better than our present varieties, say, for instance, Carmen and Elberta.

DR. AUCHTER: We know that we are getting down to Hale and Elberta, yellow flesh Elberta types, and maybe we just stop in here and put in Early Elberta, and that is about where we have been inclined to stop lately—Early Elberta, Hale, and Elberta for the commercial market.

But now I think it will pay us to watch these new things from the New Jersey Experiment Station. They have developed this Golden Jubilee which ripens two days ahead of Carmen, which is a yellow flesh freestone peach just like Elberta they say, except not quite as high red color on the cheek. That is one we want to watch. We have got them at the experiment station now, three-year growth. Maybe they will fruit some this year. Another one we want to watch here is the Eclipse which comes in here instead of Hiley. Of course, they are both white flesh peaches. When it comes to Belle, Radiance and Primrose come in with the Belle. We want to watch those. They are not in fruit yet.

MR. ALLEN: Those two last are not yellow, are they?

DR. AUCHTER: The Radiance is, but Primrose is not.

The thing is, what are you going to follow Elberta with? Well, I don't know. If I did I'd be glad to tell you, but we have got five at the experiment station that will be fruiting this coming year, and here is what they are, to follow Elberta: Brackett, Wilma, Salberta, Roberta, and Shippers Late Red, all yellow flesh freestone peaches. Before you finish your last picking of Elberta you will start picking Brackett. In some orchards you will just finish Elberta and the next day start on the Brackett. Some times with your last two pickings of Elberta you will be picking Brackett, and you can extend your season, depending on where you are, anywhere from one to three or four days.

It is the same thing with Shippers Late Red. It follows Elberta very closely. The thing they like to talk about on Shippers Late Red is that it is not only a yellow flesh freestone peach, but it is almost solid red color.

Wilma comes in a week after Elberta. New York State says it is very good. Ohio is recommending it too as an Elberta type a week after Elberta. Roberta is about ten days after. It comes from New Jersey, and is one of the New Jersey bunch of peaches. They say it is an Elberta type and very fine. Salberta is another between Wilma and Roberta of the Elberta type. They are not fruiting in Maryland, except the Brackett which Allens have.

We have them all at the experiment station, and they will soon be fruiting. We expect in another year we will be able to tell you which one we would plant to follow Elberta.

MR. NOFSINGER: In regard to Roberta, I have some two or three years old, a very beautiful peach, fine flavor, nice size, and I planted 350 more of them on account of the quality.

MR. NEWCOMER: Is it a hardy bud?

MR. NOFSINGER: Yes a very hardy bud and hardy tree.

MR. HOOPES: Now how about some apple varieties?

DR. AUCHTER: Mr. Hoopes has asked about a good early apple which is colored. The Maryland Experiment Station started work twenty years ago trying to breed up a better early colored apple that would ripen with Yellow Trans-

parent. We have some that ripen ten days ahead of Yellow Transparent, or we will say a week. Some of them look like they are going to be desirable, but we haven't named them, and we are not disseminating them yet.

PRESIDENT MCCAIN: We have one talk left that is on the other side, the esthetic side, and we will now hear from Mr. W. R. Ballard, from College Park, on "Landscaping the Fruit Grower's Home."

MR. W. R. BALLARD: Mr. President and Members of the Horticultural Society. It seems to me that we all realize that Maryland is a State with beautiful natural scenery, and yet, if we study the situation I think one of the first things that farmers and fruit growers and others living in the rural sections do is to remove most of the natural beauty. I was very much struck a year or so ago in coming into Baltimore from western Maryland just at the time the fall color was at its height. It seemed almost invariably when you'd come to an opening where there was a farmstead that you'd see practically none of that wonderful fall coloring that we get in our native growth.

We know that distance lends enchantment to the view, and in Maryland where the natural growth is so vigorous and we are busy chopping it down all the time, it seems we despise our native growth and we must have something foreign, and it seems true that many of the introduced shrubs and trees lack that beautiful fall coloring of foliage. I think that is perhaps true of any new country, that we have to introduce things from other countries until we find they don't give us the result that we can get with the native material.

I am sure that until recent years we have been in the pioneer stage; we have been so busy building homes in the new country that we have given little thought to this side of rural life. But I think that we have all been impressed with the fact that in quite recent years interest in ornamental horticulture has been growing by leaps and bounds.

Now, perhaps it is a little unfortunate that this State Horticultural Society has paid so little attention to the ornamental phases. The nursery business in Maryland has

grown by leaps and bounds, and we perhaps don't begin to appreciate the amount of money invested in ornamental horticulture, that is including not only the nurseries, but also all the floricultural activities. I believe, however, that we are beginning to get our eyes opened.

One thing that has brought this about is the development of the automobile and the wonderful system of State roads in Maryland, and of course, those in other States. It has made it possible for us easily to visit other sections and to get new ideas as to how to make our homes in the country pleasant and livable. So I predict that within the next ten or fifteen years we are going to find very greatly enlarged interest in the development of the home ground and to get our pleasure along with the hard work which is necessary in the growing of fruit and in other lines of farming.

I asked Professor Taliaferro some years ago what was the typical farm layout in Maryland, and he said at once that there was none. Most of our farm layouts are like Topsy; they have "just growed." I think that we sometimes get a wrong impression of what is included in landscape gardening. That is such a technical term that we think that it is limited to the spending of a lot of money in buying trees and shrubs.

Now, my idea of landscape gardening starts with the general arrangement of the farmstead, that is, the location of the buildings in relation to each other, so that the necessary operations connected with the farmstead can be carried on conveniently and with little loss in time. Perhaps on the Eastern Shore there has been, whether it was done consciously or not, a nearer approach to one of the good types of farm layouts which consists primarily in a central courtyard with the various buildings which make up the farm group located on the outer boundary of this rectagle or court. It doesn't necessarily have to be a rectangle, but it is an inner court with the various buildings surrounding it, with the house preferably a little nearer the main highway than the barn group and the barn group placed to the right or left depending upon the direction of the prevail-

ing winds. The main road, then, would come directly into this courtyard with a branch road leading to the house.

You will find that that gives a very compact arrangement of the various elements in the farmstead group, and gives room for carrying on the necessary operations. It makes it possible to have the lots that are essential on the outer side of the buildings, and then with roads radiating out to the various fields, it makes, I think, as near an ideal arrangement as we can get for the farmstead.

Now, you must keep in mind that the size and shape of this courtyard may vary between rather wide limits. I think that this general arrangement and the location of the roads and walks and the necessary conveniences are of primary importance, and if you don't get those worked out properly, then no amount of ornamentation is going to make your farmstead an ideal one.

I think with this preliminary statement we will have the lantern slides, and some of the points can be brought out a little better with these illustrations. In general, I think it is desirable to depend pretty largely upon native types or those introduced from China and Japan, because their climatic conditions are very similar to what we have here in the eastern United States, and they seem to succeed almost equally as well as our native types. That doesn't necessarily mean that you should go out in the woods and dig up this material. Under our present labor conditions you will perhaps find it cheaper to send to a good nursery and get good specimens than to attempt to get them from the woods. I think you will find you will be money in pocket under ordinary conditions to get good specimens even of some of our native material from a good nursery.

The maintenance of an open lawn is a very fundamental principle in the effective development of the home grounds. In the early days in this country the landscape gardening was done largely by nurserymen who thought of trees and shrubs as individual specimens, so that they set each plant out by itself where it had ample room for development. That has come to be known as the orchard style landscape gardening. In many of the older places of Maryland you

will find that the entire yard is now filled up with trees and shrubs, each one set out by itself.

While that may be a good system for the development of specimens it is not the proper method of painting landscape pictures, so we have illustrated here a very simple principle which, if you will follow, you can almost certainly get good effects, and that is, to maintain a fairly open lawn with your plantings developed around the boundaries. The choice of material can vary through rather wide limits, but it is really very much more important to locate your material properly than it is to be sure that you get just the right variety.

There is one consideration which should be kept in mind. The size of the material should correspond more or less to the size of the yard. The smaller the yard, the fewer trees would be used and more dependence would be placed in the shrubs and even the flowers. However, in a fairly large farmyard the shrubs would be more or less lost, and we would depend upon the trees to give us this boundary effect. There are several advantages in this general scheme. To begin with, it is easier to develop and maintain a lawn under these conditions. It is easier to mow the lawn, and with it all you get an effect which cannot be secured in the old orchard system.

When it comes to the use of trees, I think one of the first considerations is to develop a frame for the house. In general, this is best secured by planting a tree or group of trees to either side, and preferably to the front, that is, diagonally off from the corners of the house. I believe that in the rural home grounds we need to avoid the stiff formal effects. They are not appropriate under those conditions and do not fit in well with the native landscape.

What makes a planting look formal? I think some of the simple factors may be indicated in this way, that where you plant trees or shrubs in straight rows, and particularly at equal distances apart, it gives you that stiff, formal effect. You can easily avoid such an appearance, therefore, by varying the distances at which you plant trees, and by avoiding straight rows or lines.

Other places where trees are effective would be as a background for the house. Some times the wood lot can serve that purpose. Trees are usually effective along the front, along the highway. Usually it is desirable to have them southwest of the house, tree or a group of trees to protect from the hot afternoon sun. Then as I mentioned a moment ago, in the large farmyard it is desirable to use the trees for your boundary planting.

Sometimes we can use to advantage small specimen trees along the driveway, perhaps ten or fifteen feet back from the edge of the drive so you can get a good view of them as you drive by. That in general, I think give us the plan for the use of the trees.

We often get the idea that the oaks are very slow growing, and yet we have some that compare very favorably with trees that are quite often planted. The pin oak, the red oak, the scarlet oak and willow oak are very desirable trees. They are usually long lived and little affected by insects or diseases. It is true that they are a little slow getting started, but when they do get under way they grow fairly rapidly. At this point I should like to urge you to make greater use of the willow oak, which is quite prominent in the lower levels of Maryland, and yet, apparently is not at all well known. It is a very handsome tree either as a specimen or for roadside planting, and it grows fairly rapidly.

There are other native trees such as the elm and some of our nut trees, the hickory and the walnut, which make desirable trees. I am sure that some of you are finding that the named varieties of these nut trees not only make handsome specimens, but give you some returns also in the nut which they produce. It seems to me that w have somewhat overlooked the value of the black walnut, not only as an ornamental tree, but particularly for its production of nuts, and I believe that you orchardists could very well plant some of the named varieties of black walnuts to very good advantage.

The dogwood is so common in our woods that we often overlook its value for the home grounds. The pink form

is particularly beautiful in flower, and this excellent flowering tree makes an ideal plant in front of evergreens.

The red bud or Judas tree, as it is often called, is another fine native small flowering tree. In western Maryland your mountains are covered with this type, and they certainly make a wonderful show.

When it comes to the use of shrubs we think first of all, of the foundation plant. The need for such planting depends somewhat upon the character of the house. Where the house sets low to the ground, there is very little need of such groups. I think perhaps all of you have in mind some of the fine old Maryland mansions that set low to the ground that have a few splendid specimens of large trees to frame the house, and perhaps all they have in the way of shrubbery would be one or two fine specimens of the old-fashioned box, and with the greensward coming up to the base of the house you cannot help being impressed with the beauty of such a setting.

The higher the house sets from the ground, however, the more need there seems to be for toning down the harsh architectural features of the building. A mistake is often made in such plantings by choosing types which are entirely too strong in their growth, so that dwarf material such as the Japanese barberry, the snowberry, deutzia and perhaps some of the dwarf spirae as might be used to advantage. Among the evergreen types we ought to make better use of the broad leaved evergreens; the scaley types such as the Junipers are usually more formal in their character, and I believe that the farm home wants to avoid as much as possible that stiff, formal setting. We have the native holly in shrub form on the Eastern Shore and perhaps in some parts of the Western Shore known as the ink berry, and that makes a fine mass of evergreen foliage. We have also a Japanese form of green holly which is excellent. Then we have an evergreen privet in fact, two of them with glossy green leaves similar to our ordinary California privet except the leaves are perhaps larger and a little darker green. They are none too hardy, perhaps not sufficiently hardy for the higher regions of western Maryland. Then we have the

arbutus shrub as it is often called, and this has very attractive flowers from August until frost.

I have neglected to call attention to the various forms of rhododendrons and azaleas, and these are desirable not only for their evergreen foliage, but also for the wonderful effect which they produce when they are in flower. It is essential with azaleas, mountain laurel and rhododendrons to maintain an acid soil condition. The easiest way to secure proper conditions would be to bring in liberal supplies of leaf mold from the wood, preferably from oak or pine woods. Then another important feature in their culture, especially in the cooler sections of Maryland, is to maintain a fairly heavy mulch of leaves over winter, and these leaves should be left on in spring to rot down, thus keeping up the acid condition which is essential.

At the corners of the buildings where they would not interfere with views from the doors and windows you can use the stronger type of shrubs. The Spiræa vanhouttei is one of the important types of spiræas, perhaps one of the best. We have other excellent shrubs such as the various mock oranges, the golden bell, and some of the bush honeysuckles, a number of forms of viburnum, to which the snowball belongs. By the way, there is a great number of very fine new introductions from China and Japan in this group. They have very excellent foliage and attractive flowers, and some of them are loaded with attractive berries in the winter time. There is in this group a very excellent evergreen with large leaves, rather rough in texture, and it has come to be known commonly as the leather leaf. There is quite a list of these shrubs from which choice might be made.

The little slender deutzia is a very excellent plant for foundation planting or to plant in front of taller shrubs. The Japanese snowball, is preferable to the common form, because the foliage is not injured by the plant lice to the extent that the common form is.

Vines are useful at times on buildings, or particularly upon special supports. A vine such as the Boston ivy which clings closely to the surface can be used on stone or brick or houses of similar construction. Wisteria is espec-

ially desirable on rustic arbors. We have a great list of climbers which might be used to advantage.

I might say a word about lawns. Kentucky blue grass and red top form the basis of most of the lawn grass mixtures, and these two grasses planted separately or mixed will give you a good lawn. There are two or three grasses which are often mixed with these two. The red fescue is desirable for growth under the shade of large trees or in dry impoverished locations.

With the best of care there are certain locations where it seems almost impossible to maintain a good lawn. Under those conditions a ground cover such as the trailing myrtle or the English ivy or the little Japanese spurge will give an interesting effect, certainly much more desirable than the bare ground which so often occurs under large trees.

Some architectural feature usually adds interest to the home grounds. It may be a very simple structure such as this arch giving a glimpse into the vegetable garden. This happens to be a rather delightful contribution of the Lady Gay rose with the Japanese snowball. Rustic arbors are inviting and make it possible for farm owners to spend more time in the open. The housewives are interested primarily in the flowers, and under rural conditions the main dependence should be placed in the hardy perennials, because, through a careful choice supplemented by the early spring bulbs you will have something in bloom practically the entire season through.

The tulips in combination with some of the dwarf perennials such as moss pink, blue forget-me-nots, and other plants of that general type are effective combinations. The Darwin tulip requires fertile soil, and the best results are secured by taking the bulbs up each year after the foliage dies down, drying them off, and replanting again in the fall. If that method is followed you can keep them up to their best performance year after year.

The narcissus will succeed with less care than the tulips and will go many years without transplanting. They are especially attractive naturalized in the meadows or pastures. When narcissus or similar bulbs are used in the lawn it

is important not to mow the foliage off until it begins to die down naturally; otherwise it isn't possible for the bulb to store up the necessary plant food to keep them in blooming condition. That seems to be the reason why crocus and other bulbs in the lawn tend to disappear.

Among hardy perennials there is none better adapted to rural conditions than the peony. There are both double and single forms, and by a careful choice of varieties they can be had in bloom over a long period.

The old fashioned blue flag or iris as it is called is a flower which has been largely neglected. Perhaps you are not familiar with the wonderful development which has taken place in this flower in recent years. There are literally hundreds of varieties now upon the market, and they have been improved so wonderful that there is a striking range in color, in size, and in shape of the flower, and particularly in the height of the flower stem. We have also dwarf forms that bloom the last of April, and an intermediate group. Then we come to the old fashioned blue flag, and the main body of tall iris, and then these can be followed by the Japanese iris which extend the flowering season of the iris over six weeks time.

The columbine is useful for combining with the iris, since it blooms at the same time and is very charming in habit and tones down the stiff iris.

The Japanese iris requires different conditions than the old fashioned flag. They need more moisture and will respond to rather liberal applications of well-rotted manure. They are effective along water courses. The roots, however, should not be directly in the water, but should be placed high enough above so the roots can reach the water, but not actually stand in wet conditions.

The old-fashioned grass pink or Scotch pink is an attractive plant for edging borders, and it is fragrant with a clove fragrance, and is desirable for the dinner table.

There is another flower which ought to be better know. It is commonly called the painted daisy. I believe this is one of the very best flowers for the rural home grounds. It gives a wealth of flowers with excellent stems and is unusually decorative in the bouquet. Another advantage is

that they seem to stand up well after they are cut. There are both single and double forms, and they range from white through various forms of pink to very deep crimson. It is easily grown either from seed, and under Maryland conditions it seems to thrive over a good many years with comparatively little care.

The phlox is almost entirely an American type. Beginning in early spring with the moss pink, which is really a phlox, it is followed by the phlox divaricata. There is a pale lavender form found growing wild in the western part of Maryland. There are one or two other dwarf types which bloom about the same period. Then we come to the great group of summer flowering varieties.

The hardy larkspur is becoming extremely popular in recent years. One of the greatest difficulties in its culture is the pests which attack the crowns during the warm moist summer seasons. Some times the entire plant will disappear very quickly. They are hardy as far as the winter conditions are concerned, however, and I don't know of another flower which gives us finer blues and purples for cut flowers than this group.

The soil should be rather well limed for these flowers.

We have a very striking plant known as the red hot poker because of the peculiar form of the flower cluster and brilliant color. In the colder regions there is some difficulty in carrying it over the winter, but the clumps may be dug up and kept in a cool cellar about as you would cannas, and the clumps may then be divided and reset in spring.

You are perhaps familiar with the old fashioned canterberry bell. It is a biennial and somewhat difficult to grow. We have another form closely related, the Japanese Platycondon, which is a very excellent plant with blue flowers. It takes a little to get established, but it is then rather long lived and is very satisfactory as a blue flower.

While I think we should depend pretty largely upon the hardy perennials for the rural flower garden, we still need to make use of some of the excellent annuals for late summer effects. The aster is one of the best for cut flowers. We have two rather injurious pests to deal with, the beetle and a dis-

ease known as the yellows. The yellows apparently is carried in the seed, and usually spreads through the beds rather rapidly. It seems to be carried by some of the leaf hoppers. Some little protection with cloth or screen around the bed until flowering time would eliminate that trouble. It has been found recently at the Boyce-Thompson Institute that a screen perhaps three or four feet high around the aster bed would almost entirely prevent the spread of the yellow disease.

The poppy makes quite a show. It is very easily raised from seed and will normally reseed itself year after year so that thinning out is about all that would be required to succeed with this flower.

The old fashioned marigold is easily raised and effective for a mass of color.

Nastursiums are well known. The principle difficulty with this flower is the plant lice which often attack the foliage, and you want to be prepared to attack this insect as soon as it appears with nicotine sulphate sprays or with dust.

The pin-cushion flower as it is sometimes called, is used for cut flowers quite extensively.

Every one I think is familiar with the garden rose, and it is well called the queen of flowers. We are indebted to John Cook of Baltimore for giving us what is undoubtedly the most popular rose in the United States today, and that is the Radiance. The Radiance group will succeed under a wider range of conditions than any other rose that we have, and fortunately, it is one of the best bloomers so that if you confine your plantings of roses to the Radiance and the Red Radiance, you can certainly have roses the season through. There are a number of other forms which would be desirable.

Among the climbing roses Paul's Scarlet is undoubtedly one of the most brilliant and an excellent way to use this is to train it to posts perhaps 7 or 8 feet high, it makes a wonderful effect when used in that fashion.

We are indebted largely to the late Dr. Van Fleet for the production of a fine series of roses in which the old memorial rose has been used as one of the parents, and these roses are

very resistant to the mildew which often ruins the old-fashioned crimson rambler. So these new types practically take the place of the ramblers.

Among other climbers we have such excellent sorts as Dr. Van Fleet, Silver Moon, American Pillar, and the new yellow climbers Star of Persia and Emily Gray which are very excellent. Another type developed by Dr. Van Fleet which he called door yard roses, is more of a bush rose than a climber, and the Mary Wallace is, I think, the best of the lot. It has a very beautiful pink bud and makes up wonderful bouquets as cut flowers.

In recent years we have had introduced from China and Japan a number of what we might term shrubbery roses. This rose is somewhat similar in character to the old fashioned Harrison yellow, but it is much more floriferous. It blooms in early spring and gives great sprays of beautiful yellow roses. This is very excellent to use in shrubbery clumps.

In conclusion I might impress upon you the need of developing your farmsteads with convenience of arrangement, not only in the location of your buildings, but in the roads and walks, the development of open lawn spaces with plantings around the boundaries and using largely native material, hardy perennials supplemented by the hardy bulbs and the annual flowers.

PRESIDENT MCCAIN: I am sorry that it was necessary for so many of our members to leave early so that they weren't here to hear this very interesting and beautifully illustrated talk of Mr. Ballard's. They have missed a very enjoyable as well as instructive talk. This concludes the program of the Horticultural Society for this year. If no one has anything to propose or suggest we will stand adjourned until next season.

The meeting adjourned at nine-twenty o'clock.

REPORT

OF

TWENTY-SECOND ANNUAL MEETING

OF THE

Maryland Crop Improvement Association

January 9-10, 1929

The twenty-second annual meeting of the Maryland Crop Improvement Association was held in the Royal Arcanum Building, Baltimore, on January 9th and 10th, 1929. The general topic of discussion at the first session was production costs and how to lower them. At the second session reports were given on corn selection, cleaning of home-grown clover seed, and on the marketing of wheat. The attendance, although never large when meetings are held in Baltimore, was somewhat better than usual. This doubtless was due to the interest taken by farmers in some of the new developments in farm machinery.

Special attention is directed to the readers of this report to the papers on the use of the combine harvester and thresher, the effect of time of harvesting on yield and quality of grain, the importance of cleaning home supplies of clover seed, and to the reports of growers on how they select and care for their seed and supplies.

The severe rain storms in August reduced the yields and quality of the corn of the eastern part of the State. As a result the number of entries in the State corn show was somewhat lower than for several years past. The general quality of the show, however, was up to standard. The

grand champion prize was won by Mr. John S. Ward, of Leesburg, Virginia.

A new feature of the corn show this year was the Judging Contest. Sixteen adults entered in this competition. Each contestant placed four ten ear samples in each of three classes and in addition placed four ears in a single ear class. Mr. T. E. Zimmerman, Frederick, won first place; Mr. F. S. Grove, Westminster, second place, and Mr. John S. Ward, Leesburg, Virginia, third place.

The prizes consisted of gold, silver, and bronze medals appropriately inscribed. This contest was made possible through the generosity of The Southern Planter Publishing Company.

Dr. T. K. Wolfe, of Richmond, Virginia, Editor of the Southern Planter, was present and made the awards.

At the business meeting held in connection with the last session, the following officers were elected:

President—FRED C. JONES, Darlington, Maryland.

Vice-President—MATT HARDING, Cambridge, Maryland.

Secy.-Treasurer—J. E. METZGER, College Park, Maryland.

Assistant Secretary—F. W. OLDENBURG, College Park, Md.

TREASURER'S REPORT

Maryland Crop Improvement Association

January 1 to December 31, 1928

RECEIPTS

Balance January 1, 1928		$48.18
Membership dues		55.00
Sale of corn tray		2.00
Premium money declined		1.00
Appropriation Agricultural Society		250.00
Checks outstanding		
No. 234 Melor Ward	1.00	
No. 257 King Lester	1.00	
No. 273 J. E. Metzger	3.50	5.50
		$361.68

EXPENDITURES

Hennegen-Bates (trophy)	$18.00
Torsch-Franz (ribbons)	12.45
Supplies (corn show)	1.50
Labor (corn show)	2.00
C. R. Runk (travel expense)	5.98
F. D. Gardener (judge and speaker)	31.00
Premiums (corn show)	194.00
M. M. Stewart (Farm Bureau dues)	20.00
M. T. Bowdoin (stamps)	9.00
M. T. Bowdoin (stamped envelopes)	4.36
Cash in bank December 31, 1928	63.39
	$361.68

Baltimore, Maryland,
January 9, 1929.

We the undersigned have examined the books of the Treasurer of the Maryland Crop Improvement Association, and have found them correct.

Auditing Committee,
W. C. ROHDE,
JOSIAH MASSEY.

PRESIDENT'S ADDRESS

T. E. ZIMMERMAN.

The annual meeting was opened with an interesting address by the President of the Association, Mr. T. E. Zimmerman. Mr. Zimmerman reviewed the improvement of corn in his own county, Frederick, and emphasized especially the importance of good seed, proper management of the crop with reference to land preparation, cultivation, and low cost production.

It was the expressed opinion of Mr. Zimmerman that corn shows (county, State, and national) have done more for the improvement of corn growing and the establishment of standard types than any other single agency directly fostered by farmers. Within the last forty years corn shows, better seed, and improved fertility practices have

been the means of more than doubling the average acre yield in Maryland.

In closing, the Association President outlined what might be done to further improve our work and also made a strong appeal for greater support through membership in the Crop Improvement organization.

THE USE OF COMBINES ON THE EASTERN SHORE

By E. H. E. THIEROFF, Preston, Maryland.

If there is a season of the year that the grain farmer of Maryland is beginning to dread, it is the harvest season. For it is at this time that the last cultivation of corn, the cutting of the hay crop, and in a good many cases, the second cutting of alfalfa must be harvested to get the much desired good quality of hay. The same can be said in regard to the last cultivation of corn, for it is on this cultivation one largely depends if the corn field will be free from weeds. To place the farm in a chaotic condition, all we need is a wet season and with the existing labor shortage the grain farmer usually is not in the best frame of mind. In a good many cases the wheat crop is the first cash crop, and therefore the anxiety of the farmer to save the crop in the best of condition is very important.

The combine or the harvester thresher has come to solve this condition, and in my case has solved the harvesting of wheat and soybeans fully up to my expectations. The harvesting of these two crops has been reduced from a chaotic to a well-organized program. With a nine-foot combine, a farm tractor, and four men, we are able to harvest from 18 to 20 acres per day by giving the field the once over with all the fuss and bother left out, as was the condition with the old method of binder and large threshing crew.

Furthermore, on farms where the combine is used, a lot of labor is saved in the farm home for there are none of the meals to be prepared for a large crew of hungry men. Just ask any of our farm women what it means to prepare a meal for a threshing crew, and then there are delays that

can occur so easily just at the right time to make things very disagreeable in any farm home at this time.

As I have experienced all these things I can talk from actual experience. It did not take me very long to decide to give the combine a trial, for well did I know that the machine was not perfect to meet our eastern conditions, but was convinced that we could use the combine and change our methods to fit the combines and save us a lot of labor and expense of harvesting soybeans and wheat, which is one way of increasing farm profits. The first crop that we harvested with our combine was soybeans, and as the common expression is, "Then is when the fun began." Green operators, a new machine, and a hard crop to harvest, but as perseverance is the conquerer of all things, we adopted the system of being everlastingly at it. By making some attachments of our own design, in two seasons we learned that we could harvest soybeans in any condition, tangled or not, for we learned early that the tractor operator was the feeder of the combine and on his judgment on the thickness of the growth depended the speed of travel in harvesting. The time of beginning to harvest soybeans is as soon as all the leaves are off the vines and the time of day when the vines are thoroughly dry. In the case of wheat, about a week or ten days after wheat is ready to harvest with the binder (last week in June), or as soon as the grain contains not more than 14 per cent of moisture. For at this time I find that wheat will store and keep in good condition without heating in the bin.

The first question anyone would ask is, "What does it cost to harvest with the combine?" I have gathered a few figures for comparison which are as follows:

TABLE I

Cost of Harvesting and Threshing 80 Acres of Wheat With Tractor-Binder and Large Threshing Outfit.

80 Acres average per day 20 Acres	
5 men 4 days at $3.00 per day	$60.00
70 gal. kerosene for tractor at $.14	9.80
1 Gal. lubricating oil for tractor	.60
150 lbs. of twine at .15	22.50
Board for 5 men 4 days at $1.00	20.00
Total	$112.90

Brought Forward		$112.90
Threshing		
22 men 1 day at $3.00 per day	$66.00	
Board for same 1 day at $1.00 per	22.00	
Threshing 1,400 bu. at .08	115.20	
Total		$203.20
Grand Total		$316.10
Total cost per bushel	$ .22	

TABLE II

Cost of Harvesting and Threshing 80 Acres of Wheat With Ten Foot Combine

80 Acres average per day 20 Acres		
2 men 4 days at $5.00 per day	$40.00	
3 men 4 days at $3.00 per day	36.00	
40 gal. kerosene 4 days at .14	22.40	
15 gal. gasoline 4 days at .16	9.60	
2 gal. lubricating oil at .60	1.20	
Board 5 men 4 days at $1.00 per day	20.00	
Total		$129.20
Total cost per bushel	$ .09	

No cost of depreciation or interest on investment is included, for this would differ in regard to the equipment used.

One very important factor in using the combine is the ability to get the equipment over the ground. The combine is somewhat cumbersome and heavy and if there are any steep places in the field or spots of light or sandy soil where traction is not very good, a lot of time can be lost at these places. Therefore the tractor should have plenty of reserve power to take care of these conditions. My experience has convinced me that the combine for our eastern conditions should be of large straw handling capacity and have a draper or platform canvas width of at least forty inches, and the thresher capacity to handle full length straw on a thirty-bushel wheat crop at a speed of three miles per hour. A ten-foot header will harvest 3½ acres per hour and every two-foot addition to the header will increase the hourly capacity ¾ acre.

In closing I will say that if I had to farm without the tractor and combine today on a general farm where grain is the important crop, it would not take me very long to decide to quit and enter other fields of employment. I have

often stated that if I had to give up the tractor and now add the combine, I would also give up the farm. The greatest trouble with the farm in the United States, as I see it, is that the farmer has not kept pace with the other industries, and the reason for this is that the farmer's profits were too small to meet the conditions, and these conditions are largely beyond his control.

EFFECT OF DELAYED HARVESTING ON YIELD AND QUALITY OF WHEAT

By E. H. SCHMIDT.

The subject of effect of time of harvesting on the quality of grain is a large one. Much work has been done in an effort to hasten harvesting and to see what changes occurred in wheat and other grains by so doing. The problem was to determine what loss in yield was incurred and what factors of quality were affected one way or the other by early cutting. On the other hand, however, the delay of harvest and prolongation of ripening has come to be an important problem where wheat is now being cut by the combined harvester-thresher or is likely to be so harvested in the near future as the use of that machine spreads. This paper presents a discussion of the results of certain experiments conducted on the Maryland Experiment Station farm at College Park in an effort to determine what effect time of cutting, particularly cutting delayed after the normal harvest date, has on yield and quality of the wheat crop.

Several years ago members of the Agronomy Department became aware of the impending use of combines in Maryland. In the spring of 1927, before wheat harvest, a project was outlined to see if it could be determined what effects were produced in the grain by cutting samples at intervals over a period of about three weeks in all, starting before the normal harvest date and continuing for a while afterwards. This work was only partially executed in 1927. The following year, 1928, the project was carried through in full.

A small measured quantity of grain was cut every second day, beginning June 26, 1928, from an eight-acre field of

Mammoth Red wheat on the Experiment Station farm. A square yard measuring apparatus was used and the wheat cut with a sickle. Ten such cuttings scattered through a portion of the field were made every other day and constituted a sample. The sample was tied into a bundle or sheaf and carried indoors to dry. Threshing was done on July 13 on a small machine with which there is little loss. Samples cut July 10, 12, and 16 were threshed directly on coming from the field. It was thought that those samples were ripe enough and fit for combine harvesting, and to thresh them immediately seemed the closest simulation to the field method.

From these samples was secured a rough estimation of yield per acre, the weight per bushel, and later the protein content. Of course a critical examination by eye of the threshed wheat aided in forming opinions. Likewise observations were noted in the field, in cutting, and in threshing, and records of the weather were kept.

As to the results of this work, in the first place we can say that, judging from two years' observations, shattering does not occur to any appreciable extent in the field for at least two weeks after the completion of normal harvest. This was directly observed with Mammoth Red and with Leaps varieties. There was no opportunity to examine Currell's and Fultz' which are usually considered to be the worst of our wheats in respect to shattering. However, they should not be very different from Leaps.

As time passes, the dead ripe grain bends over, nodding so that the heads may eventually hang so close to the ground as to be cut off by the knife and dropped beneath the table of the harvester to the ground. But this extreme was not approached during the three weeks period of observation. Lodging, which is a different process, occurs in the green and ripening grain under conditions of excessive moisture, but not at all when the straw is ripe and dry. Our observations indicate little danger of the wheat "going down" from

any natural cause during a reasonable length of delay in harvesting.

The yield of threshed grain, obtained from the samples cut every second day, supports these observations. If shattering were severe, or losses incurred through increased lodging, the yield should decline progressively as time increased and harvesting was delayed. This is not the case. Indeed as we will see the yield increased throughout the length of the experiment. Of course, the samples in this study were cut by hand and threshed without any loss of grain, but it would seem that a combine in which the grain never leaves the machine between cutting and bagging should do as well.

The grain from late harvest has a bleached or faded appearance due to its exposure to weathering, but the studies fail to indicate any loss of yield or quality thereby. At present a weathered appearance is discriminated against more or less consciously in the grain trade, but if the combine comes into general use that will no longer be the case.

A number of the observations and tests can be presented conveniently in tables and graphs. Table I contains the

TABLE I

Notes on the Condition of the Wheat at Harvesting and Threshing, 1928

	HARVEST		THRESHING	
Sample	Date	Condition	Date	Condition
8-1	June 26	Fields not uniform ripest in dough stage	July 13	Damp and moldy
8-2	" 28	Ripening fast	" 13	Same
8-3	" 30	Much ready to cut	" 13	Same
8-4	July 2	Harvesting started condition ideal	" 13	Dry,in good shape
8-5	" 4	No change	" 13	" " "
8-6	" 6	No change no shattering	" 13	" " "
8-7	" 8	Same	" 13	" " "
8-8	" 10	Still no change	" 10	Dry, threshed clean on cutting
8-9	" 12	Unchanged		
8-10	" 14	Raining, no sample cut	" 12	" " "
8-11	" 16	Dead ripe	" 16	Dry, grain bleached

harvesting and threshing notes. These are of interest in reference to the yields and tests recorded in Table II. The yield per acre, weight per bushel, and protein content have been charted in Figure 1. The changes which occurred during the extended period of harvest under investigation are thus illustrated.

TABLE II

Yield Weights, Weight per Bushel and Per Cent Protein of the 1928 Samples Effect of Time of Harvesting Experiments

Sample	Date	Yield in lbs.	Yield per acre	Weight per bu.	Protein per cent Basis 13.5% Moisture
8-1	June 26	3.1	25.8	55	10.5
8-2	" 28	3.0	25.0	53	10.25
8-3	" 30	3.8	31.7	54	10.0
8-4	July 2	4.0	33.3	59.8	9.85
8-5	" 4	4.1	34.2	59.8	9.4
8-6	" 6	4.5	37.5	60.1	9.2
8-7	" 8	4.3	35.8	60.3	9.4
8-8	" 10	4.7	39.2	60.4	9.0
8-9	" 12	4.5	37.5	60	8.9
8-10	" 14	No sample			
8-11	" 16	4.5	37.5	57	8.8

A few notes are necessary in regard to the data presented. Yield in pounds is for one-five-hundredth of an acre. The samples cut were equivalent to that. Yield per acre is calculated therefrom. The weights given are not those of the grain immediately as it came from the thresher, but were secured after the grain had been stored for several weeks indoors in a dry place. It was well aerated and had come to a comparatively uniform moisture content.

The first three samples cut failed to dry in the sheaf. They were found to be moldy and wet in the centre when opened for threshing. This probably accounts for their low yield and low weight per bushel.

It will be noted that no sample was cut on the 14th of July. This is because of rains which most certainly would have prevented normal field harvesting with the combine. Accordingly it was not considered desirable to cut a sample.

That harvested two days later, on the 16th, the last sample, shows the effect of the rains. The weight per bushel dropped 3 pounds probably because of increased moisture in the grain, and the grain was bleached.

The weather conditions throughout should be kept in mind. For a time preceding and during the first days of this test, the weather was warm, mostly clear, but with frequent rains. This was an ideal condition for ripening. From the first of July until the tenth it was hot and dry— ideal harvest weather. The binder was put into the fields at the Experiment Station on July 2, and harvesting was completed the following day. During the night of the fourth of July a heavy thunderstorm occurred blowing over many of the wheat shocks. By the end of another week the grain was judged to be in condition for combine harvesting as has been stated. The third and final week of the tests was one of easterly winds with several heavy rains.

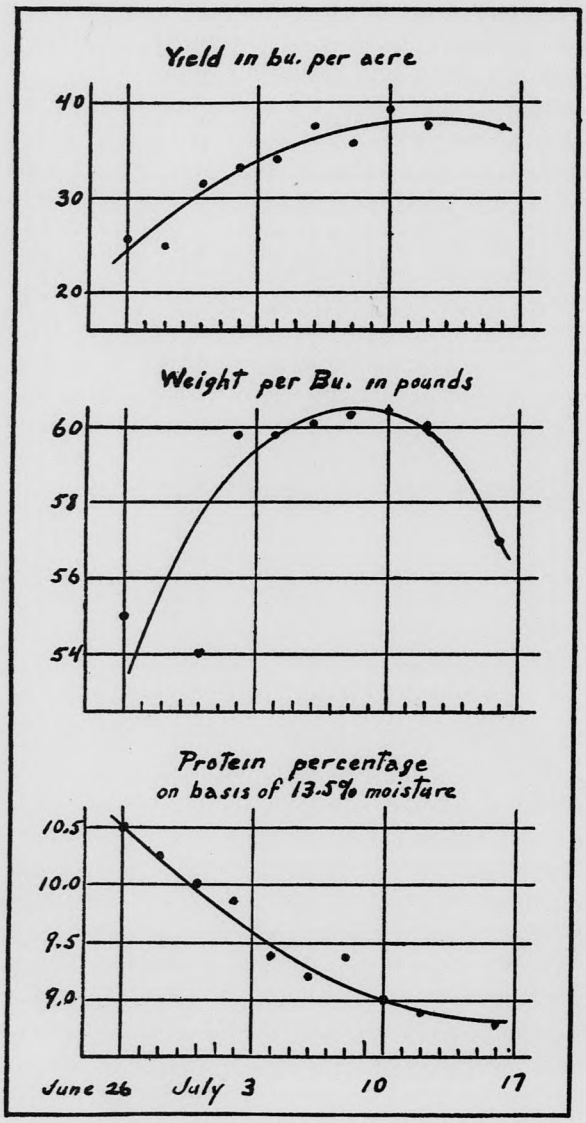

Figure 1—Effect of time of harvesting on yield, weight per bushel, and protein content of the 1928 wheatcrop.

The charts in Figure 1 are divided vertically into three periods of a week each. These coincide with the periods for weather and of condition of the grain. The first is prior to binder harvest. The second from July 3 to 10 is the period of final ripening at the end of which the grain was judged to be in condition for the combine. The last week is a final period of rainy weather and little change in the wheat.

The weights obtained show that the yield increases from 3.1 pounds, equivalent to 26 bushels per acre, on June 26 to 4.5 pounds, equal to 37.5 bushels at the close of the experiment in the middle of July. There was but little increase during the last week or ten days, but at the time when harvesting was done in the normal manner on the farm with the binder only 4.0 and 4.1 pounds were secured from those samples. This is equivalent to 33 and 34 bushels per acre, a loss of 3 or 4 bushels, or about 10 per cent of the possible crops. This is a rather surprising and very important point. If the same is true under field conditions as with these small hand-cut samples, then harvesting should be delayed about a week longer than is customary when using the binder. On the other hand, it is true that the binder in its rough mechanical action induces shattering in dry wheat which mitigates the value of delaying harvesting. But it must be considered that apparently the crop is not fully developed, nor the maximum yield obtainable until it is dead ripe.

Weight per bushel is an important consideration in determining the commercial grade of wheat and is an indication of quality. Except for the extreme ends of the range of time under study, the weight per bushel remained very nearly constant. It increased perceptibly, however, and was at its highest on July 10, a week later than harvest with the binder.

Finally the protein content which is indicative to a limited extent of baking qualities, was determined. High protein is necessary for bread flours. The protein content decreased from 10.5 per cent on June 26 to 9.6 per cent at time of binder harvest to about 8.8 per cent when dead ripe. These percentages are given on the basis of 13.5 per cent moisture, which is usually considered standard for comparison. This

is in line with accepted theories. As the grain develops the nitrogenous compounds or proteins are transported into it first and the carbohydrates or starches only to a limited extent in the early stages and increasingly as ripening draws to a close. Early harvesting results in shrivelled only partially filled grains as is well known, but of relatively higher protein content than would have been the case if the grain had been allowed to ripen completely. So from the standpoint of protein content, early harvesting is advantageous.

Evidently an ideal harvest date is determined by weighing and balancing a number of factors. A delay for combine harvesting of a week or ten days after binder cutting would appear to be distinctly advantageous for yield, somewhat so for weight per bushel, and slightly disadvantageous for protein content. A longer delay results in no increase in yield, loss in weight per bushel, and further loss in protein.

As to milling and baking qualities, no experiments have been possible, and we have no direct evidence.

The published work of other investigators throws no additional light on the immediate problems. Attention has been centered on early harvesting rather than late. To cut early and avoid frosts is the great problem in the northwest. Their workers report some loss in yield and an increased percentage of protein in wheat harvested immature just as the results here reported would indicate. The U. S. D. A. report on Combine Studies in the Great Plains contains statements which lead us to believe that in practice the moisture content of combine harvested wheat is as low or lower than of that cut with the binder and threshed later, and likewise that the weight per bushel and protein content compared favorably. But because no experimental work is reported, no attempt is made in that bulletin to state the influence of the delay in harvesting on the various measures of yield and quality.

Physiology leads us to believe that there can be little change going on in the kernel in the head after it has dried to a moisture content of 15 per cent or lower. We do know that protein is laid down in the kernel while it is still immature and that starch continues to be placed in the grain

so long as there is any activity going on. Accordingly, as ripening progresses the relative amount of protein in the grain decreases. In regard to test weight per bushel, that is dependent first on maturity,-well filled grains weighing heaviest, then on soundness, disease often lightening the grain, and partly on moisture content. Wheat weighs more than water and so an excess of water in grain will reduce its weight. Only as delayed harvesting has an effect on these factors enumerated will it influence the weight per bushel of wheat.

To recapitulate it is suggested from the evidence reported that shattering and lodging are not to be greatly feared and that yield increases materially until the final stage when the grain is dead ripe. As to quality, first there will not be any important changes during a two week's delay in cutting after the present time of harvesting except in the bleached appearance of the grain which is really a great deal more harmful in appearance than to the composition and quality of the grain. Secondly, that what small changes do occur are, in regard to protein, harmful throughout, resulting in progressively a lower content, and as to test weight, beneficial until complete ripeness and then possibly retrogressive.

Quality of grain does not appear to be a very important problem in combine harvesting.

GENERAL DISCUSSION—HOW I SELECT SEED CORN

By Fred C. Jones

Our method of preparing seed corn for sale begins with the selection of the seed corn that we plant in the spring.

We try to select a uniform type of grain to plant, and because of the fact that our Johnson County White has a pretty deep kernel and only medium-sized cob, it requires just a little bit longer for it to mature than corn of a more shallow grain, and so we feel that it is necessary to plant it just as early in the month of May as the weather will permit. Then it will mature before the frost hits it and can be har-

vested and become thoroughly dry before freezing weather, so that the germ cannot be damaged by freezing. We sort our corn in three piles after it is husked. We place the best corn in a good open crib with slat sides and bottom, and usually have it all harvested by November 10th.

About January 1st, we usually begin to sort out our seed corn from this best corn and bag it and transfer it to a granary where we have ample room to prepare it for seed. We hand pick each ear that looks like good seed, and with a hatchet or corn knife we cut about a half inch from the butt of each ear and about an inch from the top end.

By so doing we can note the health of the cob and detect any indication of root rot and also note the appearance of the kernel down near the germ end. After it is thus prepared we shell it and then fan it, and last of all run it through the grader, after which it is bagged and ready for planting.

After we have moved our seed corn into the granary, and before it is shelled, we select promiscuously several ears and shell a small lot from each ear and send it to the State College or to the Crop Improvement Association and have them run a test for germination on it.

At the same time we usually select a number of ears and run a test for germination ourselves. We use the regular "rag doll" method of testing, and we find it is very helpful in our selection of seed to study the results of these testing experiments, and try to note why one ear will show 100 per cent germination while one beside it, which is at first glance apparently just as healthy, will show little or no germination.

We feel that the very first essential of a good corn crop is to have good seed, and that is why we try to take pains in our selection and preparation of the seed and then we can reasonably expect a fair return for the work and effort expanded, after the corn is harvested.

We feel that we have a good deal yet to learn about the seed corn business but we hope that with the help of our Extension Service and the "field men" they send out to us at every opportunity, we can produce a good article of seed

corn that will perform in a manner the like of which your humble servant is obviously a physical exponent, and that is to "GROW BIG."

J. OLIN HARRISON

We select our seed corn in late September or early October. When the corn is cut from the field we put it in shocks not too large, so that the corn will be thoroughly dry by husking time. When husked, we put it in a corn house that is well ventilated, to stay until spring. Then we select the best uniform ears we can find and germinate. We butt and tip the corn, inspect the cob for root rot, and select all pure clean cob corn which passes all other inspection for seed. This has proven very successful for six years.

F. H. MCCONNELL

I go into the field when the corn is ready to cut with basket and bags. I always select from the hills that have two healthy stalks with a good ear on each, ears about five feet from the ground and hanging slightly downward, straight rowed and about nine inches long. Husk and place in a building where plenty of air can get to it, hang it up by strings or on the floor in rows about one foot high like cord wood.

In the month of March or April I test for germination. If done this way 95 to 100 per cent will grow.

I have done so and I think it is a good plan to get a small amount of seed of several varieties, as near by as possible, and plant one row of each, side by side across the corn field. You will then be able to determine the variety that suits your soil conditions the best. Do not sow seed from this planting, but get certified seed of your choice from another source.

THE PRESENT STATUS OF CORN SELECTION AND BREEDING ON THE FARM

BY W. B. KEMP, College Park, Maryland

Farm selection of seed corn has a two-fold purpose. The one is to obtain seed that is well matured and free from seed-borne diseases; in other words, seed that will produce vigorous plants. The other purpose of selection is its use as a corn breeding or improving practice. The result of experience and investigation indicates that selection for heavy, sound, disease-free seed in almost all cases, will pay amply for the trouble expended. However, this selection usually does not constitute breeding because one does not consciously change the hereditary nature of the variety within which selection is practiced.

Turning our attention to selection as a breeding practice, we find that, a few years ago, Richey, of the United States Department of Agriculture, summarized the results obtained from all corn-breeding methods practiced at that time. There have been no recent results to change his findings. Briefly, it may be stated that relatively small benefits have resulted from selection within a corn that has demonstrated itself to be well adapted to the conditions under which it is grown. The type associated with highest yields on soil that is not fertile is a long ear with relatively few rows of thick, dense, heavy kernels, grown upon a dense, heavy cob. This means few kernels to the inch of row and hard, corneous starch within the kernel. It also usually means relatively shallow kernels. Under conditions of greater fertility apparently one may select for ears with more rows and with deeper kernels. Hence, where very high yields are expected, the show type of ear may be grown.

It is well to issue a word of warning, however. If deep-kerneled show corn is to be grown the seed should be carefully dried. Spring germination of crib-saved corn usually shows poorer germination on the deeper-kerneled ears. This condition results in a tendency for the kernels to become shallow in corn grown from such crib-saved seed.

Among the more detailed breeding methods that have been

practiced, the one that has proved most disappointing in results is the ear-to-row method. Such remarkable differences may be noted in the yield of different ears that it seems logical to expect a significant part of this yielding ability of the good ears to be transmitted to their progeny. On the average, however, the slight permanent benefit that has been obtained by this method of breeding has not been sufficient to justify use of the ear-to-row test as a means of effecting increase in yield. On the other hand, this method has proved highly effective as a means of changing characteristics of the plant or ear that do not contribute directly to yield increase.

The most remarkable yield increases that have been obtained have been brought about in the first generation of a cross between inbred strains, but the work involved in this breeding method is very expensive and the details of procedure are so exacting that it is impractical for the farmer to carry them through. Seed development by this process, however, is now coming onto the market. This seed must sell at a very high price, but it is possible that adapted crosses eventually will be obtained for each section. If this accomplishment comes about, the increased yield obtained by use of such seed should justify payment of the high price at which this seed must be sold. The fact that seed is a first generation cross between inbred strains is no proof, however, that high yields will be obtained by its use. Strains may be good or poor and each must stand upon its own merits as demonstrated by trials in the section where its use is contemplated. In any event, the benefit to be expected from the use of such seed is limited to the one crop. Hence, the farmer cannot save seed for his own planting, but must get seed for each year from the original source.

In closing let me repeat that benefit is always to be expected from the selection of sound seed for planting. But within sound seed of an adapted variety relatively small benefits are to be expected from picking ears of any particular type. The available evidence indicates that the best type for soils of low to medium fertility produces long ears with relatively few rows of thick, heavy kernels produced

upon dense cobs. With increased fertility types with more rows and deeper kernels may be selected if one does not sacrifice weight and density of grain or of cob.

A WAY TO CLEAN RED CLOVER SEED

By GEARY EPPLEY, College Park, Md.

The talk I am scheduled to give this morning, "A Way to Clean Red Clover Seed," is a report of tests we have been running at the Maryland Agricultural Experiment Station to try and find a practical method for farmers to use in cleaning their own clover seed.

Before the report on the cleaning tests are given, I am going to review briefly the work that has been done in trying to restore the high yields of red clover, and putting that crop back in the position it once held.

In the United States the use of all hay and forage has doubled from 1899 to 1919 and during this same period the amount of clover, and clover and timothy has remained stationary. Figures from the 1927 Yearbook show that in comparing the period from 1919-1922 to the period 1923-1926 that in Maryland the clover acreage has gone from 102,000 acres to 85,000 acres and that the yield per acre has reduced from 1.35 tons to 1.25 tons. This general decline in our most important legume crop has caused wide-spread attention throughout the timothy-clover belt. Dr. Pieters, in charge of Forage Crop Investigations in the U. S. Department of Agriculture, reported two years ago to this Association on the extensive experiment the U. S. Department of Agriculture was conducting to determine the adaptability of red clover of various sources. If you remember, in short, their work showed that the United States could be divided into three red clover areas and that for best results each area should use seed grown in their own area.

At the Experiment Station at College Park tests have been conducted on red clover of various sources. This first chart shows the average yield per acre for the season of 1923-1924 and 1927 of August seeded red clover from various sources.

Source	Tons Per Acre
Maryland	3.50
Ohio	3.43
Tennessee	3.30
Chilean	3.08
French	3.00
Hungarian	2.62
Minnesota	2.42

This chart shows that Maryland grown seed produced best for Maryland and that seed from the States of Ohio and Tennessee, which are in the anthracnose area, produced nearly the same, while the foreign grown seed and Minnesota seed was not as high. The limiting factor in successful red clover production in Maryland and the States west and south of Maryland is the disease anthracnose. This disease is most active in the summer and in years favorable for the disease cause most damage to the second cutting, also the disease is more damaging on spring sown clover than the fall sown clover as the disease has a good chance to attack the clover seedlings during their first summer. For this reason red clover of various sources was seeded in the spring of 1927 and the yields on a weed free basis secured in 1928 are shown in chart two.

Source	Yield per Acre Tons
Maryland	1.52
Maryland	1.06
Maryland	.98
Michigan	1.45
Illinois	1.39
Oregon	.92
Oregon	.88
French	.38
French	.38
French	.28
Italian	.26
Hungarian	.12
Roumanian	.44

From these figures it is evident that Maryland and other U. S. grown anthracnose resistant red clover yielded best and was much superior to foreign seed.

From the work I have just reviewed and from other work

that has been conducted in the country, we feel convinced that the proper type of home grown clover seed will give the best yields.

The next step to improve the red clover situation was to try and locate in Maryland some red clover that had been grown on the same farm for six or more years to insure its adaptability to Maryland conditions and to develop a source of seed for Maryland farmers.

In 1927 a short survey was conducted in Washington, Frederick, and Carroll Counties which showed that there were many farmers interested in producing red clover seed, and also there were a number of sources of long standing adapted strains in this State, but the growers stated they could not secure a good price for their seed because it contained too much buckhorn plantain.

When an effort was made to encourage those farmers who purchase clover seed to use Maryland grown seed they responded that they would like to, but it was too dirty. Therefore, it will be possible to develop a healthy situation in the production of Maryland grown red cover it will be necessary to clean the seed on the farm so as to eliminate weeds and especially buckhorn plantain.

Ways of removing buckhorn plantain from the red clover were studied, but it was found that the sawdust, damp cloth, and velvet methods were not practical on the farms and that some system of screens should be used. The Agronomy Department referred the matter to Professor Carpenter of our Farm Engineering Department, and after some study, Professor Carpenter purchased two screens, one with openings 3/16 inch long and 24 to the inch in width and one 3/16 inch long and 22 to the inch. These were the regular screens for a power seed cleaning machine.

We tested these screens and found that they did rather efficient work. Realizing that it would be best from a seed cleaning standpoint for every farmer to have a seed cleaning machine, but that this condition was not always a good financial proposition, we devised a system whereby a farm with a few dollars investment and the use of time during the winter months could clean up his clover seed.

Taking the regular screens for the cleaning machine we had built a wooden frame 18" x 21" and 3½" deep and tacked the screens on the bottom. By using the sieves much like an old-ashioned ash sieve and working the seed slowly over the 22 to the inch screens, very good results were obtained.

Following are the results secured by cleaning five different lots of seed over each of the 22 or 24 to the inch screens.

OVER 22 TO INCH SCREEN

No.	Per cent Purity		Per cent Weeds		Number of Buckhorn in 5 Grams		Per cent Buckhorn Reducted	Per cent Loss in Cleaning
	Before	After Cleaned	Before	After	Before	After		
A	92.7	98.8	2.15	0.61	178	18	90%	29%
B	90.2	97.3	8.14	2.06	179	20	89	16.6
C	94.1	98.9	1.56	.45	58	5	91	23.9

OVER 24 TO INCH SCREEN

A	92.7	98.3	2.12	.80	178	28	84	27.3
D	92.1	96.4	6.65	3.08	172	33	81	12.9
E	95.5	98.8	.88	.34	29	8	73	23.3

In every case it will be seen that the percentage of purity was increased, that the percentage of weeds was decreased, as was also the number of buckhorn. The coarse screen took 90 per cent of the buckhorn out of three different samples. The figures also show that the coarse screens cleans the seed best but there is a greater percentage of loss.

On checking the purity as obtained with these hand sieves with the run of Maryland grown clover after it has passed through a seed house, we found that it was about the same.

This is just a preliminary report, but we feel that we have found a way for the farmer to clean his own seed at a low cost. If clean seed is planted, in time, there will be clean crops of clover seed and Maryland farmers will be able to move their seed at a higher price and the Maryland farmer who buys seed will also be benefitted.

THE BEST TIME TO SELL WHEAT

BY ROGER F. HALE [1]

[1]Assistant Agricultural Statistician, U. S. Dept. of Agriculture.

Last year the farmers of Maryland produced 8,745,000 bushels of wheat. From July to January about 68 per cent, or 5,947,000 bushels, of the crop has been placed on the market. The prices paid for this crop dropped in July from $1.34 per bushel to $1.20 per bushel in August, and rose thereafter, reaching $1.27 per bushel on December 15. Will the prices paid farmers for the remainder of the crop be higher or lower than those received during the first part of the marketing season? When is the best time to sell wheat? The most practical way to solve a problem of this kind is to study wheat price movements and their causes during the past. The United States Department of Agriculture in co-operation with the University of Maryland Agricultural Experiment Station has assembled monthly wheat price data over a period of seventy-seven years to aid us in the solution. These data show the average prices paid farmers for wheat in this State in each month since 1851, the original quotations being obtained from mill journals and farm accounts containing records of actual transaction.

Wheat prices have always fluctuated and the farther back we go in the records the greater the fluctuations have been. From 1851 to 1855 the farm price of wheat rose and then declined until 1857. Thereafter, prices rose again until the peak was reached in 1866, one year after the Civil War. The general trend of prices was downward from 1867 to 1894, while from 1895 to 1920, the price trend was upward. Following the World War prices declined until 1923 when an average price of only 96 cents was paid for the crop. In 1924, wheat prices advanced and were at a still higher level in the following year. The average price paid Maryland farmers for the 1926 crop was 20 cents a bushel less than in 1925 and prices remained at this lower level until early last year.

Undoubtedly, the outstanding factor which governs the price paid the farmer for his wheat is the size and quality of

the harvest. However, it is the size of the world crop and not the size of the crop in this country or in this State that wields the dominating influence over the price the farmer will receive when he hauls his wheat to market. The farm price of wheat goes up when the size of the world crop decreases and down when the size of the crop increases. For example, in 1872, when there was a European crop failure, wheat prices in Maryland averaged 22 cents per bushel above those in the previous year. In 1897, when world production was nearly 400 million bushels below normal the price of Maryland wheat again rose to a relatively high level. In 1923, when world production was 250 million bushels above normal, wheat prices dropped below a dollar per bushel in this State for the first time since the war.

Another important influence affecting the price paid Maryland farmers for wheat is the demand factor. On the demand side supply and price of substitutes are the principal factors affecting price movements. If rye is plentiful and cheap, European countries will eat more rye bread and buy less wheat from the United States and other areas of surplus production. As far as the average price per season is concerned, world-wide supply and demand factors govern prices paid for wheat even though the soft red winter wheat grown in this State does not enter largely into the export trade and is used primarily in the manufacture of pastry flour. Supply and demand conditions in this country, however, affect month to month price changes to a considerable extent. The average monthly prices of wheat for the seventy-five year period 1851-1925, are given below.

TABLE I

Average Monthly Prices Paid Maryland Farmers for Wheat During The Crop Years—1851-1925

Month	Price per bu. (Cents)	Month	Price per bu. (Cents)
July	117	January	126
August	117	February	127
September	118	March	125
October	120	April	127
November	121	May	133
December	123	June	128

During the period from 1851 to 1925, wheat prices during July and August averaged the same but began to advance in September and continued rising until March. At this time, the seventy-five year average price dropped two cents but recovered in April and reached the high point of the season in May. The average farm price declined five cents from May to June but in the latter month was still 11 cents per bushel above the July average.

Average monthly farm prices of wheat during the five-year period, 1923-1927, fluctuated even more. With the exception of a slight decline in the September average the farm price rose from the low point of 122 cents per bushel in July to 148 cents in the following February.

TABLE II

Average Monthly Prices Paid Maryland Farmers for Wheat During Crop Years—1923-1927.

Month	Price per bu. (Cents)	Month	Price per bu. (Cents)
July	122	January	146
August	125	February	148
September	123	March	144
October	127	April	143
November	132	May	153
December	137	June	145

Thereafter, prices declined four cents a bushel in March and one cent in April but again reached the average high point of the season at 153 cents per bushel in May.

Although the average differential between wheat prices in September and the following May was 15 cents per bushel during the seventy-five year period, 1851-1925, and 30 cents per bushel for the five-year period, 1923-1927, the average net profit from holding wheat from September until May did not assume such large proportions. A considerable portion of the average increase in wheat prices is required to pay the cost of holding the grain, whether on farms or in local or terminal elevators.

The University of Maryland Agricultural Experiment Sta-

tion has conducted a survey in six counties to determine the extent to which farm storage costs would eat up the profits from holding wheat. Considering handling charges, losses from shrinkage and damage by insects and rodents, interest on money invested in storage equipment, interest on the value of the grain stored and miscellaneous expenses, it has been estimated on the basis of this study that wheat can be stored on the farm over a period of three months for about six cents per bushel, while the cost of storage over an eight-month period or from September to May would amount to about ten cents per bushel.

Assuming that the cost of farm storage from September to December is six cents per bushel, a profit would have been realized from the storage of wheat in twenty-seven years during the period, 1851 to 1928; the increase in price over and above the cost of storage averaging 12 cents per bushel. During the remaining 51 years, the average loss from storing wheat from September to December would have amounted to about nine cents per bushel. In 42 years, since 1851, the May price of wheat was sufficiently higher than in the previous September to give holders of stored grain an average net profit of 26 cents per bushel over and above a storage cost of 10 cents per bushel. During the remaining 35 years farmers who stored grain in September and disposed of it in the following May would have lost about 18 cents per bushel.

In about one year out of every three, a substantial profit may be realized by producers by storing grain from September to December. By storing wheat on farms from September to May a profit may be realized about once in every two years. It must be remembered, however, that when prices fail to rise as the marketing season progresses, considerable losses may be expected from holding grain. However, these losses do not average as large as the profits in the years when prices advance. It is also interesting to note that although a greater net return can be secured by holding wheat on the farm until May, instead of disposing of it in December, the producer can expect greater losses during the years of price declines.

If past relationships between supply, demand and wheat prices in Maryland hold good in the future, farmers who market their wheat in the spring will, on the average, make a reasonable profit. However, total income from wheat production may be materially increased over a period of years by those who take the time to make an intelligent and careful study of the wheat price situation at harvest time and heed the indications which may point to price increases or decreases as the marketing season advances.

A fairly high degree of relationship exists between monthly farm prices of wheat and the time the United States crop is placed on the market. Maryland farmers usually sell over one-half of their wheat crop by the last of September, the grain being disposed of either immediately after threshing or as soon after threshing as it is convenient to haul it to the local market. This period of heavy marketing (July to September) is also usually the period of lowest prices. From 1851 to 1875 the farm price of wheat averaged 117 cents per bushel during both July and August and the September farm price one cent higher. The December price, however, averaged 123 cents per bushel and the price in the following May, 133 cents per bushel as compared with 118 in September. From 1923 to 1927 the average farm price of wheat in this State was 14 cents higher in December than in September and 22 cents higher than September in the follow- three times the amount of wheat disposed of in December and nearly five times the amount sold in May.

Aside from market receipts throughout the season, several other supply factors have an important influence on prices. In July the estimated size of the winter wheat crop in this country and carry-over of all wheat from the previous year are important supply factors. As the harvesting season progresses, the estimated production of all wheat, both winter and spring, in this country, Canada and other nations in the Northern Hemisphere is an important supply factor affecting price. From July to December, prices may change due to changes in production estimates. Throughout the fall and winter months prices are affected by changes in the prospectives outturn of the wheat crop in Argentina, Aus-

tralia and India and the progress of fall sowings of winter wheat in the Northern Hemisphere. Poor condition of the wheat crop due to adverse weather conditions may raise the farm price, while satisfactory progress of the growing crop may retard price advances.

In the spring months the abandonment of fall sown wheat due to winter killing is one of the most dominant supply factors. For example, early in March of last year unfavorable weather conditions in the winter wheat States pointed to considerable damage to the growing crop and a consequent reduction in the size of the 1928 crop. The condition of winter wheat on April 1 was the lowest in years and prices accordingly rose. By May of last year the abandonment of winter wheat in Kentucky, Illinois, Ohio and Indiana was the highest on record. These indications of a smaller wheat crop in 1928 forced the price last May to a point 68 cents above that in the previous September. However, the yield per acre of the 1928 wheat crop far surpassed expectations. The United States crop was larger than last year; Canada harvested at least 15,000,000 bushels more spring wheat than last year and indicated world production is 100 million bushels greater than in 1927. In consequence, the farm price of wheat in Maryland declined from May to August and has averaged slightly less this season than it did last year.

Prices Maryland farmers received for wheat during the remainder of this crop-year will be largely dependent upon the outturn of the Argentine crop and upon the progress of winter wheat in the United States. Heavy shipments of Canadian wheat to Europe after the opening of the Great Lakes to navigation this spring will probably force the farm price of Maryland wheat to lower levels earlier than usual.

The Department of Agriculture publishes an account of the current wheat situation and future price prospects each month in its official publication "Crops and Markets." Weekly wheat market reviews and special soft winter wheat market reviews may also be obtained on request from July 1 to January 1 from the Bureau of Agricultural Economics, Grain, Hay and Feed Market News Service, Washington,

D. C. Although on the average wheat prices paid Maryland farmers increase sufficiently from threshing time to December and May to pay the cost of storage and provide a small profit, the Department invites you to use it in the future to help distinguish between the years when profits may be reasonably expected from those when unfavorable demand conditions will probably force prices lower as the season progresses.

REPORT

OF

Twenty-second Annual Meeting

OF THE

Maryland State Dairymen's Association

Baltimore, Maryland, January 10, 1929

The Annual Meeting of the Maryland State Dairymen's Association, held in the ball room of the Hotel Rennert, Baltimore, Maryland, convened at ten twenty-five o'clock, Mr. R. Smith Snader, President, presiding.

PRESIDENT R. SMITH SNADER: Gentlemen, the meeting will come to order. I am sorry that we haven't more in numbers this morning to represent our State Dairy Association. Nevertheless, we have the speakers here, and while we are few in number, you men that are here are representing people back in the counties, back in your rural territories, and you can carry the message back.

This is our mid-winter meeting in connection with the Farm Bureau, and it is the only opportunity we have to give you men facts and things that have happened. You men in the dairy industry know that there isn't a day that there are not new problems coming up in marketing conditions, and there have been since our annual meeting, quite a lot of new problems coming up, not only in milk, but in other commodities. We men of this organization have done our part in trying to meet the different conditions that come up from time to time.

I am not going to make any special speech here to-day. I haven't any prepared speech. You men are anxious to know about conditions. I don't think it is any use for me to talk to you men this morning about organization. That has been driven home. We have the organization of the Maryland State Dairymen's Association, we have just passed our eleventh annual meeting, and these men that

are here are just as proud of your organization as we as officers are. We feel that we have accomplished a great deal in our organization. It means a whole lot for an organization to organize and stay together for a period of ten or eleven years. It is about ten years ago that our members began along co-operative lines.

You know, men, how the feeling is in the counties with some of our members that never get out to a meeting, never hear the different problems discussed. They have it fixed in their minds that it ought to be this way and it ought to be that way. In some cases it is a little selfish on their part. They feel some times they are not getting just what they should have in regard to averages and things of that kind, butter fat, etc. But organization work with the proper organization means that in the different communities we have extended that invitation to our organization and have taken care of it in such a way that I feel our members, I might say, are 100 per cent satisfied.

Of course, in our rural sections we have at times a member here and there that gets dissatisfied and knocks occasionally, but that knock doesn't hurt us, it keeps us alive. That knock comes into the office and it just gives us new blood and new energy in order to go out and explain conditions as we see them.

I want to take this opportunity of saying that I feel that in our 1928 year, which we have just closed, we have had a very prosperous year in the dairy industry. In fact, the reason I say that is that there is a great tendency for people to go into the dairy business when they never had thought of being dairymen before. That shows to us and shows to you gentlemen that they are after the dollar, as they can get more out of milk than they can from any other commodity they raise on the farm. So that is sufficient proof.

We are very proud that we have maintained through 1928 the same price winter and summer for our product, and we hope that nothing will happen in 1929 so that price will have to be lowered. Of course, it depends a great deal upon our membership. An organization without a loyal membership doesn't amount to anything. The officers and Board

of Directors can work and sweat and fume if we don't have the proper co-operation of our membership, but I am glad to say this morning that we have that co-operation. It makes us feel that when we make a move that we see is for the best interests of our members that they are behind us, and it is an incentive to work that much harder.

I want to bring to you this morning the greetings of the officers, and I hope that 1929 will be as prosperous to all of you as it has been in 1928 in the dairy line. I know back on our farms it is very discouraging when we think of the prices we receive for our commodities. But we people, that are in dairying, have so arranged our products on the farm that they go through the cow, and not only we people that have been in dairying for the last 25 or 30 years, but others have seen what we have been doing, and their trend is towards dairying. So I say it is proof to all of us that the people in the agricultural business realize that they can get more out of their milk than they can from any other product that is raised on the farm.

I had an opportunity of attending the American Farm Bureau Federation convention in Chicago, and out there all interests, all organizations, for the first time seemed to be working for the one end. There seems to be a better feeling in all organizations. There was a time in this organization, and you know it as well as I do, when other organizations wanted to do things because they wanted the credit, but I believe the time has come when we are all getting better united, so when anything happens in legislation or anything else that is for the benefit of all of us, it doesn't make any difference which organization put it across; we are behind that organization that can devise ways and means and plans that will get legislation that will benefit the agricultural interests.

I don't think there was ever a more opportune time for us all to stand together and work together as a unit in accomplishing these things. That is about all I am going to say to you at this time.

Mr. Heaps, our Secretary, has some charts here this morning and a few facts that I know will interest you all.

ADDRESS

By I. W. HEAPS, Secretary-Treasurer

Mr. President and Gentlemen: I am sorry there are not more dairymen here this morning. This reminds me a little bit of a wet day when I was going to school. It always seemed to me that I could learn more on a rainy day, because there were fewer pupils there, and I suppose there was less to attract my attention away from books, and probably the teacher had more time. Anyway, I always thought I got more out of a rainy day than when the whole crowd was there. So I hope that is what happens here today, that you will get more than you would if this room were full.

This meeting is rather an embarrassing meeting in a sense, because it is not the end of our fiscal year, and any report that I make has either got to be the report of our fiscal year which ends on July 31st, or a summary of it, which is very largely guess work. I am going to use this morning, our figures as presented in our annual meeting. I don't know that there has been any material change since that time, and just for a background I will use those figures.

As our President has already said, probably last year was the most profitable year of the dairy industry in this section that we have ever had. I don't know whether you are going to agree with me in that statement or not, but that is what our books show. We did not reach the highest peak of prices last year that we have in years gone by during the war, but for all the milk produced we received the highest rated average price that Baltimore ever paid for its milk, and that, I think, is extremely significant when, if in addition to that statement, I say that we handled the greatest amount of surplus milk that Baltimore ever had.

We find that our members last year produced over twenty-six million gallons of milk that was marketed in the Baltimore market. We received for that on the four per cent basis eight million one hundred and sixty-one thousand, two hundred fifty-seven dollars and seventeen cents. ($8,161,257.-17). That was the largest amount of milk we ever marketed, and the largest return we ever received. We find that there was over eight million gallons of that twenty-six million

manufactured in cream and sold at the manufactured price, and that manufactured price is based on New York 92 score butter. In spite of the fact that we marketed over eight million gallons surplus milk, we had a weighted average price of thirty-one and thirty-six hundredths cents per gallon on the four per cent basis which was the highest weighted average price the Baltimore shipper ever received for a 12 months' period.

We know that that has not only been profitable from the standpoint of the figures that we get from our records but we know better how to tell when a thing is profitable than by watching production at that price. The farmer is just as wise without figures as the economist some times is with figures. He wouldn't stay in a business very long if he could get out when he is losing a lot of money. I don't mean to say that he made a lot of money out of the milk business, but I do mean to say that the milk business last year paid him better than anything else he had on the farm, and after all is said and done, the price of milk is more controlled by the price of other products on the farm than it is by its actual cost of production. If you sit down and make an estimate of what your milk costs you, you might not show a profit, but if you compare what you got for your milk with what you got for your other products, I will say that it has the more profit or the less loss of the two.

Therefore, we know, as long as production is on the increase, that the price that the producer receives must be better than anything else he has got on the farm or he wouldn't increase production, and especially would he not increase production, and buy cows at the price of dairy cows in the past year or two years.

Those are some of the outstanding things that we have to recognize. Then again, we believe this—that there is a greater return per farm out of the milk check today than ever before. This increased production in the Baltimore market has mostly come from increased production per shipper and not from increased shippers. There has been a considerable increase in the number of shippers in the last two years, but the increase in the number of shippers does

not anywhere near compare with the increase in total production.

Now, the same old story prevails today as it has during the past four years. I don't want to take up your time in going back and rehearsing an old story. A year ago today I presented charts here at the meeting showing a comparison between the marketing of milk on a four year basis of what we term uncontrolled production as against the last four years of what we term controlled production, and showed you men what had taken place. The fact is, that we have had but one price change in over five years on basic milk, and that change was on October 1, 1926, when the price went from 31 to 33 cents. I am satisfied that I am safe in saying that no market in the world can boast of that achievement.

What does it mean? What does it mean for you to know or to anticipate what you are going to receive for your milk? You are sitting in your cow stables, those of you who milk—and I don't suppose there are many of you here that do—but maybe you know how much milk you are shipping at least, and you can practically tell what your milk check is going to be, and then you turn around and practically have it spent before you get it, and there is a lot of pleasure in that. Now, if we could plant a crop of wheat or corn or put in beef cattle or anything else and tell what profit we were going to get or what return we were going to get, why that would be fine, but we don't. We have the cost of the production, but we don't know what our return is going to be. In the milk business you know practically what you are going to have left each month after your feed bill is paid, even before you get your milk check.

You have received for your milk through May and June just the same price you did in October and November. Most markets, because of their marketing plan, are unable to carry such a price through that season of the year because of the extreme production; therefore, the good price probably that they were able to pay in the fall and winter months is robbed by the breaking price during the summer months. In other words, they give it to you in the fall and take it away from you in the summer.

We believe that a farmer needs money just as much one season of the year as another, and we believe that the consuming public is more able to buy and more willing to buy and pay a price for its milk during the summer than they are in the winter, because their living expenses are less in the city in the summer than in the winter. They don't have any coal bills, they don't have very much gas and electric light bills. Therefore, the milk bill can be more easily met in summer than in winter. Consequently, our plan has been not to jack the price up on the consumer in the fall and winter and let it down in the summer months. The farmer has benefitted by the fact that he has gone throughout the most of the year carrying the same price on his product.

After we think over all these things and pat ourselves on the back and think what a wonderful job has been done, we still have back in that producer's mind that he wants more of that good thing. Well, that is fine. He wants more of it. He says, "Yes, you are doing a fine job. Your prices are all right, but you have got to give me more basic milk." Some of them will go so far as to say, "If you don't give me more basic milk I am going to quit."

Well, gracious, if all of us fellows in the room quit we'd have oceans of milk tomorrow morning and it wouldn't be a drop in the bucket. Why, the men come in and say, "I want to put on twenty more cows, and you have got to give me more basic milk or I am going to quit. I can sell my milk in Washington."

I say, "Of course you can, and we can take all the milk out of Washington you can handle. We have got a stack of contracts lying on the desk today from Washington shippers begging to come on the Baltimore market."

He wants to go to Washington. I said, "Maybe you can sell your milk in Washington, and maybe you can't. But sit down and figure if you are going to get more money for your milk in Washington than here." So we sat down and figured it up right before his eyes, and he got 31.6 per gallon for every gallon he produced. I said, "Brother, you would give a lot to get thirty cents for every gallon you produced."

He said, "Of course, I would." I said, "Yet, you got 31.6 cents and you come in kicking and hollering for more."

He said, "I didn't know I was getting it." I said, "For Heaven's sake, take your pencil and milk check and figure it out before you make a trip to Baltimore."

That is what is happening. I am saying this cold-bloodedly, because it is a fact, and it is happening every day.

Now, in the last issue of the "Farmer" you probably saw in there—I didn't intend to mix this in, but it just fits— an article written by one of our members telling us how we ought to all calculate our basic milk. I wish the gentleman were here this morning. I'd like to discuss it with him. I am dying to get into an argument with him. He says that we ought to take a certain percentage of the shipper's milk each month, totaling it, taking over a period of ten months, totaling 100 per cent, and that ought to be set up as that man's basic average. That is fine, absolutely fine. I don't think it would take a lot of brain matter to find some percentage to set up as a basic quantity to a shipper and call it his basic milk. That isn't a big job. But what has that got to do with it? What is the problem? It isn't to average some milk to you men, but it is to get a basic quantity of milk that is fair to you men that represents Baltimore City's consumption of fluid milk. That is the idea, whether we like it or don't like it. There is no law that I know of that can compel anybody to buy or consume more of a product than he wants. Therefore, we as producers have got to produce and meet the required consumption.

Then the next job is to allocate that consumption fairly among our members. We can't take our members and say, "Well, I like this fellow Bill Smith over here. He is a good fellow. But I don't like that cuss of a Jones over here." We can't do it that way; we never have done it that way. But we have got to find a basis that equals that consumption that was actually produced by the individual shipper at a time when he had no restrictions. I have said this over and over again, and I am going to say it again, that in 1921-22-23 there were no restrictions on production of milk, and that we

found in 1924 that the average produced by those shippers during those three fall months of those three years was as near 100 per cent of the fluid consumption as it was possible to calculate. Therefore, those basic quantities were set up as a basis for the individual producer's basic quantities.

Since that time, though, basic quantities have been adjusted according to the individual shipper's fall production. Now, if there is anything fairer than that, I don't know what it is. This gentleman in a letter to the editor of the "Maryland Farmer" said that I had adjusted these basic quantities to suit individual cases. I defy any man in the State of Maryland or in Baltimore market to produce a single instance where a man's basic average has been changed other than what was changed in the whole market. I have had men come in, yes, I have had women come in—I had a lady less than two weeks ago who sat in the office one morning for over an hour with tears running down her cheeks. Her husband sent her in thinking I'd pity her. I have a very kindly feeling for the ladies, but when it comes to business, especially basic milk average, they all look alike to me.

The lady asked the question over and over again, whether I was going to do anything for her. I said, "I am sorry, but I cannot, I must not." She said, "Then we stay right where we are?" I said, "Absolutely." She left. Because, men, the very minute we undertake to set up an average on that kind of a basis we would be absolutely gone.

Now, the basic average is the one outstanding subject today especially at this season of the year, because if there are any changes made in basic averages they take place as of January 1st. You will recall in the past in 1926 and 1927, in July of those years, you received a letter stating that all those shippers who failed to produce 80 per cent of their average, would lose their old average, and that all milk lost by those shippers failing to maintain their averages would be credited to those shippers having the highest percentage of surplus during the fall months. That was done according to promise.

A letter went out in July, 1927, stating that the same thing would be done except that they were to produce 90 per cent

of their old average, and that all milk loss would be credited to the shippers who produced the highest per cent of surplus, and that was done. But it was done to our sorrow. Why? Because we found that on January 1st last year we were compelled, in order to make our promise good, to credit to our members 92,000 gallons of basic milk a month higher than our average sales for the past six months for fluid milk had been, and it gave us a pretty dark picture of the coming year. But we did it because we promised it.

This past year you didn't get that exactly. You got a letter saying you had to produce 100 per cent of your old average to maintain it, but we did not promise you that we would credit all the milk that was lost to the shippers who had the highest percentage of surplus. The reason we didn't promise it was because we had gotten in trouble the year before and we had carried a surplus throughout the year because of that promise. And that is where and why I have a chart here this morning to show you men because some times you can see by chart and get a reaction you don't get by figures.

We made the promise, we kept it, we marketed your milk, and you got the money. I don't believe that you believe such a thing could have been done under any other plan than the one we are operating.

We have here a chart which I want to use for a few minutes. (Chart). This chart is made up to represent the fluid consumption and the amount of basic milk produced each month by our members. This has nothing to do with the surplus of milk as you know it. It is purely a chart showing the actual consumption of fluid milk and the actual monthly production of basic milk, not what was credited to the farmers, but what was actually produced.

The red bar shows the consumption, monthly consumption of fluid milk, and the black bar the monthly production. You will find, starting out here with January, that we started right out with a surplus. That was due to the fact that we had promised and had credited a surplus. We should have started out even, because that is merely the intent of the plan that we score up each year on January 1st

and start anew with as near 100 per cent of basic milk allocated to our producers as possible, and that basis is taken from the fluid consumption of the last six months of the year.

In other words, we take the average consumption of the last six months of 1928 as our basis for fluid consumption of 1929, and by this plan, if operated as intended, we would set up on January 1st that amount of milk to our members.

Now then, we have hoped always and have experienced always up until this last year an increase in consumption, and that increase in consumption is taken care of by the new shippers who come on the market from time to time. Therefore, under that plan the new shippers in the past should not have given us any trouble. But we find in the past year that we started out with a surplus of basic milk. We have had all of that trouble, and in addition to that all of the basic milk allocated to the new shippers who have come on from time to time, and to have still further trouble we find our consumption of milk lower today than it was this time last year. So the only trouble we have is that our people in Baltimore are not consuming enough milk.

Just how to make them consume more, I don't know, but we have done about all we felt we could do. We have had numbers of reasons produced as to why they are not consuming more milk. Some investigations have been made, and one of the outstanding things is said to be that we are having more homes being bought by people on the installment plan, we are having more automobiles and radios being bought on the installment plan, and our people are cutting down on the consumption of their milk to meet these monthly installments, and I don't know but that is just about as near the truth of the matter as we could possibly find.

We are living in the age of installments. You can buy anything almost on installments, and that is a great inducement for people to buy. They don't have the money, but they want the article; they think they can buy it on easy terms, and they don't realize that they are obligating themselves more and more until probably they get over their heads. But I think that has been one of the outstanding

reasons why our fluid milk consumption has been on the decline.

But we find from actual figures that in January we had a surplus of basic milk, and look what happened in February. This February production here is quite largely due to it being a short month. The farmer is paid in February always on the same gallonage basis as he is in January or any other year. He gets credit for his full basic quantity, but we are generally two days short in sales. Consequently, we have a much greater surplus of basic milk in February than we do in any other month. Just in one month last year, the month of March, did our sales exceed our basic purchases. That was rather a singular thing. We don't know how to account for it, but sales jumped up in March. It was our highest month, I believe, in the whole year, although probably May was equally as high. But in that month we had a slight surplus of sales over basic purchase.

We find in April quite a drop in the sales. In May we find the same thing. Then we come to June, and look what happened here. Here is our consumption, here our basic purchases. Here in July the same thing happened; August the same thing; September, still worse. Then in October we make a jump and go up in sales; we don't know why. But you see the sales here dropping each month. Then in October they shot up, dropped back in November, and raised a little in December.

I present that chart just to show you that the producer has been paid on his normal basic quantity each month regardless of the consumption. You may ask what was done with that milk. Every gallon of that milk that was purchased over the fluid sales went into cream and was sold to the dealer on the basis of 92 score butter, New York market.

Who paid the loss? The loss was paid out of the adjustment fund. You want to know where the adjustment fund comes from. Well, we try to carry a little bank account, but that adjustment fund is getting on the dangerous side. Whenever the dealer puts a gallon of surplus milk into bottles he must pay into the adjustment fund the difference between the manufacture and the basic price.

Now, over these four years we have had some adjustments coming in where the sales would jump up for a month, and they put quite a little surplus milk in the bottle. We'd get quite a little fund coming in. We carried that fund for a rainy day, and we have had it accumulate just on purpose to meet a situation that we have gone through this past year, to tide us over, as it were. That adjustment fund has been sufficient to take care of the loss sustained in the basic milk that went into cream during the past year, the dealer always paying 33 cents for all the milk he sells as fluid milk, and the more surplus milk he puts in bottles doesn't mean anything to him, but it is accounted for in this fund which goes back to the farmer to meet these losses that have occurred from time to time.

So far so good. We are not hurt at all. We are sitting fine. But the point I want to bring out is this: We cannot promise that we are going to do a definite thing when we have to depend on the consuming public to make that promise good. We have learned that lesson. We don't know what we are going to consume; therefore, it is foolish for us to promise a thing, but we can always promise this, that the farmer will always get full credit for all of the basic milk consumed. He will get credit for every gallon of fluid milk consumed, wholesale, retail, bulk, and bottle.

Then we are fortunate again in having a good market to manufacture our excess over fluid consumption into cream. I am proud to say that our market on cream is far in excess of the average fluid milk market. When we take an average for milk last year of close to 28 cents a gallon for surplus milk, when we look about and see so many markets that are only paying 21 to 24 cents for milk for fluid consumption, we are fortunate.

I have here in my pocket a telegram that I am going to use just to bring out a story. I don't know whether you men are aware of market conditions in other markets, but I want to cite a condition that exists in Chicago, the largest consuming market that we have anywhere in the United States. Chicago producers have been getting for years, the highest price, which during the winter, has been around

21 cents a gallon. Their feed costs them practically the same as yours, probably a little difference, but they have got a longer feed period than we have. They have a shorter pasturage season and a longer feeding season; yet, that has been their price.

Those farmers out there have tried on several occasions to have a marketing organization. They have had, I think, at least three marketing organizations, and they have all three failed, and they have had a very disastrous failure, a very costly failure. Of course, we know that every time an organization fails it just makes it that much harder for somebody else to resurrect one. Two years ago a new organization was started in the Chicago territory, and we find that the people who were responsible for the old organization that went on the rocks came out and fought the organization of a new one. Consequently, we have in the Chicago territory two classes of producers, one of the old class who is fighting organization, and another class that has been giving their life blood almost to reorganize. With the old class the dealer is aligned. Consequently, the new organization has not only strife among its own people, but has the combined opposition of some producers and dealers.

There has been quite a little done for this Chicago problem. They have had an investigation committee out there. They have had men of high standing in the city become interested who have given their time and gone in and have held these investigations, held hearings as it were for the past six weeks or two months. Just what has happened I don't know, but I have a telegram I received just a few minutes before I left the office, and it says:

"Situation here serious. Need you at once or sooner. Locals divided. Will attempt to see dealers tomorrow. Final action Friday. Can you come."

I don't know just what to make out of that. But looking at it from what I know of the past situation there, it looks mighty serious to me. It looks to me like the organization that is now in existence and has worked so hard and so earnestly for the past two years or more is about to go on the rocks.

To me that is a pretty sad situation. It hurts all co-operative markets. Whenever one organization or one group of men fails to co-operate it just makes it that much harder for every other group to co-operate.

If we, as producers of milk, or as farmers in general do not come to the point where we are going to be able to work with and to help our fellow man engaged in the same industry, we have mighty little to look forward to in this agricultural endeavor. I can't see the future. You can talk to Congress until doomsday, and you can ask for legislation, but I believe that the greatest thing that will ever be accomplished for agriculture will be done by agriculture itself organizing, and working out its own salvation by more economic production and marketing and by the highest possible degree of education throughout the agricultural world.

We are just a little bit alarmed over the decreased consumption of milk, but I am in hopes that we can better the storm and that you will not be any worse off in basic quantities in the coming year or present year than you have been in the past.

That may be a disappointment to some men, but we can see nothing to be gained by lowering prices. I don't believe the public can consume one gallon more milk at 13 cents a quart than at 14 cents a quart. It has nothing to do along that line. Consequently, I think we have got to just work along and see what takes place. Election is over. Probably there will be a greater degree of employment. There have been lots of people out of work, and when business gets on a sounder basis we can come back and come back right, and I am in hopes that that is what is going to take place. But certainly we cannot afford at this time to go out and add any additional basic quantities to our shippers present average. That, I think, I can say definitely, and we will have to be content to go on and be happy, even though we stand still.

MR. MACY: Is there any tendency towards the increasing of the butter fat in the general supply?

MR. HEAPS: Are you speaking from the farmer's standpoint or the market standpoint?

MR. MACY: The Market.

MR. HEAPS: That is a subject we have very little to do with, but an explanation might be in order. I guess it is a very timely subject with some of our producers, and has caused considerable alarm in the last few months. The fact is, in regard to butter fat, we have, as I understand, in fact, I have read, a State law of 3.5 butter fat standard. We have a city ordinance of 3.5, and up until about September, 1926, this ordinance was in force by the Health Department. But the total supply of milk in Baltimore was and had been for some time averaging around 4.2 butter fat. This naturally cost the dealer a cent a gallon more than the estabished 33 cent price. In other words, it was taking a cent a gallon out of his margin of profit, and he made a kick and prevailed on the Health Commissioner to let up on the enforcement of this 3.5 standard, which was done.

Everything went along very nicely until this past spring, and the butter fat began to drop down, down, down, and the consuming public began to growl, and some of you recall that about two letters a week or more were coming out in the "Evening Sun" saying that the milk supply was nothing but chalk and water. Again, I think that had quite a little to do with our decreased consumption of milk. The fact was, that it was the butter fat; we were buying milk on the street and testing it in the laboratory, and the dealers were doing the same thing, and they did find milk that was as low as 3.4 in butter fat. Well, a drop from 4 per cent down to 3.4 is just a little more than you could hope to fool the public on. That cream line is their barometer, and in addition to that, we had from some unkown cause the bluest skim milk I have ever seen—that is, the milk after the cream had raised. If you held the bottle up, below the cream line it was absolutely blue, and that is why the public was saying it was chalk and water.

We had quite a to-do about it. The health department began to rouse themselves and look about, and they found an enormous quantity of milk was coming into the city below 3.5 standard. In fact, we have records to show that milk is being produced and delivered here as low as 2.8 and 2.9, and lots of it at 3.1 and 3.2.

So the first thing I was informed that they had a letter to be sent out to the producer as to what had to be done. Some gentlemen who were interested in pure bred Holsteins came to see me, and we talked the matter over and got in touch with the health department and tried to advise that that wasn't just the course that ought to be pursued, and the reason we took this stand was because the health department had allowed the purchaser to buy unlimited quantities of cows producing the low fat and we didn't believe it was fair to allow them to buy them and produce milk up to a certain point and then knock them in the head. As we know, there have been enormous numbers of Holsteins coming into Baltimore territory the last two or three years. I make a guess that probably 97 or 98 cows out of every 100 have been Holstein, and probably those that came in were of very low fat producing cows, because I presume those fellows in Wisconsin very largely know what their cows are doing, and they are probably not selling all the best cows. However, that was the situation.

We have had numbers of demands that certain things be done, and as an organization we have felt that it was a very ticklish question, that we had no right to come out and say to the Holstein man, "You have got to die and the other fellow can live." It has never been our policy. We don't want to get into anything of that kind.

We advised the health department that possibly something could be done in reference to the butter fat differential, and if given time, the Holstein breeder might be able to weed out some of the low fat producers and it would stop these Jersey fellows from putting Holstein cows in with the Jersey milk in order to get a lower fat content and a greater profit. Because it is a known fact, and we might as well admit it, that the fellow who is producing 5 per cent milk is getting 88 cents a pound for his fat and the fellow who is producing 3 per cent milk is getting $1.08. You can't fool the farmer very badly. He knows what cows pay him the best. Consequently, instead of having increased production of the higher fats we are having decreased production of the higher fats.

Now, if the higher fat producing herds were being maintained to mix with the lower fat producing herds, we'd still be going along nicely, but I think there have been two very destructive things in operation. One was occasional herds of low fat producers, and the addition of Holstein cows to the higher fat producing herds. I am told some of the pure bred owners have put in Holstein cows to mix with their milk and hold it down because it was getting too high in fat content and they were not getting the gallonage. You know what they say about the Jersey cow, "Put a fifty cent piece in the bucket and she won't give enough milk to cover it. Put a fifty cent piece in the bucket of Holstein milk and you can still see the fifty cents!"

Anyhow, we are not a breed organization. We are marketing milk of all breeds, and we want to keep on doing it. We believe it is only fair that we should do it. We believe that we ought to have all the breeds. I think we'd have just as much trouble if we had all Jersey and Guernsey milk or if we had all Holstein milk. But I do believe the time has come when probably some adjustment will have to be made in order to maintain a sufficient quantity of high fat milk to mix with the lower fat milk. Just what that is going to be, I don't know. Of course, the Jersey and Guernsey milk fellow says the differential is all wrong. I haven't any argument. He says it ought to be three-fourths per cent. We have had the Holstein men come in and say to make it a whole cent, that they'd rather have the whole cent differential than to have their milk barred from the market.

But I think the whole cent differential would be just as extreme as any other thing we might do. But the three-quarters of a cent differential would still leave eight cents a pound in favor of the low fat milk.

MR. HARRY: What would that make it a pound for butter fat?

MR. HEAPS: On the three-quarter differential the butter fat on the 3 per cent milk would be worth 98.7 and on 5 per cent 94. There is four cents difference practically. Anyway, on a three-quarters differential the milk would be still higher for 3 per cent butter fat than the 5 per cent.

There was a proposal made that the differential be three-quarters of a cent below 3.5 and applied above 4.5. We were satisfied with that, but the dealers were unwilling to go along on that because of the calculation, and I don't blame them much, because I didn't see how in the world they would ever get through with such a calculation. If they would take the money off below 3.5 and apply it above 4.5 they would have a complicated proposition, because the gallonage in all probability wouldn't be equal.

So they have refused to do that, and they have recommended a three-quarters differential. That was what started the whole thing.

We have taken no action on the matter, and are hoping that something will develop in the industry that will be acceptable to the producer, because we have no desire to take a stand and say that you must do this or you must do that. However, I think that one reason why the thing is like that at this time is because we are now in the high fat period of the year and we are not having any trouble, because the milk on the streets today is 4 per cent or better. But I am afraid, men, that about the time March comes along we are going to have some trouble. Just what is going to be done I don't know, but I do know this, that the public in Baltimore have been raised, schooled, and lived on 4 per cent milk, and you can't fool them, and we might just as well make up our minds that we ought to give them what they want by some means or methods.

Are there any other questions? I guess not. (Applause).

PRESIDENT SNADER: Gentlemen, Mr. H. C. Barker, of the University of Maryland, has been with us for the past year. Lots of you know him and have worked with him, and know he is a jolly good fellow, and I believe he is here to do us a whole lot of good in the dairy industry. Mr. Barker. (Applause).

ADDRESS

BY H. C. BARKER, University of Maryland

Mr. President and Members of the Maryland State Dairymen's Association: There are two or three things that I thought of talking about here this morning, but I am going

to omit part of my talk so that I can get you out of here in time for lunch. I want to say first that I appreciate more than I can express here this morning the co-operation and the kindness and all that that you Marylanders have shown to me during the past eleven months. I have been here nearly a year, and as Mr. Hibbard said when Mr. Snader mentioned that I had been here nearly a year, "I thought it was only about seven or eight months," and I can assure you, it doesn't seem like a year to me. You have all been mighty kind to me, and I have been able to get around to some of the places, not nearly as much as I had hoped to during the year—I just wish it were possible for me to visit every dairyman in Maryland.

As I have gone around during this past year, I am going to speak of two things that have come to my attention that I believe are important from the standpoint of the Maryland State Dairymen's Association. The first one is along the line of feed. I do not expect to go into a long talk on the feeding proposition, but I do want to mention the fact that I believe we could use in our State more good roughage than we are using at the present time, more clover, more alfalfa hay, more silage, and less timothy hay. We have a lot of farms, especially on the Western Shore, with silos, but on a good many of those farms I believe instead of one silo we should have two and in some cases more. In other words, we have men who are producing milk for the Baltimore shed that could produce their milk more economically on more roughage, and they could use some silage in the summer to supplement their pastures.

Last year was an exceptionally good year for pastures. I think everybody is agreed that we seldom have a year like last summer so far as pasture is concerned. The pastures were succulent from early spring until late this fall, in fact, I was on a farm this week where the fellow told me he had just put his heifers in, that they had been out all of this time. I want to tell you that they look pretty good considering the fact that they hadn't had a mouthful of anything but grass up until the first of this week.

The way to produce cheap milk is to have plenty of cheap

feed. The only way to get the cheap feed, that I know of, is to raise it, raise most of it on the farms. I think that we could very nicely produce at least a ton or more of good clover hay or alfalfa hay on most of our Maryland farms for every cow that we have in the herd, and if every cow that is furnishing milk for this shed has the opportunity to get this ton of good legume hay. In that way the milk will be produced much cheaper, and I believe we'd find our cows in better shape; not only that, but the cost of feed would be cut down considerably.

I was very much interested last week in a little article in one of the dairy papers on a survey that has been conducted on 159 farms in Indiana, dairy farms. This little survey showed that on 33 of these 159 farms they had plenty of legume hay, that the profit, if you want to call it that, over the feed cost, that is, what you had left after your cost of feed was taken out on these 33 farms where they had plenty of legume hay, was $166.00 per cow. On 43 of the farms there was no legume hay used at all, and on these farms, instead of having an income over feed cost of $166.00 they had an income of $79.00. In other words, you have an advantage with legume hay of about $87.00 per cow over and above your feed cost that you do not have where you are feeding timothy hay in preference to clover or alfalfa.

I think the majority of our dairymen are growing some legume hay, that is, some clover hay, and when I say some I mean that a good many times that is included in a mixed hay, and the percentage too many times is about 20 to 25 per cent. clover and 70 to 75 per cent timothy. It is hard, I know, for a lot of us to get away from timothy hay, but I believe so far as milk production is concerned, we can all get away from the timothy hay proposition and we are going to be a lot better off.

I realize that I am talking here to the leaders of the various communities which you represent. Probably there is nobody here that feeds timothy hay. You probably all feed clover and alfalfa hay, but you have neighbors, you have fellows in your organization at home that are not at the present time feeding any legume hay, and of course, they are

paying the bill. Not only that, but right in this group of men is included this group below the average, this group that are producing really the surplus milk.

You hear complaints some times about these propositions of producing baby beef for a certain price and on a certain amount of feed, or the hundred bushels of corn to the acre contests, all of these things. Some men don't believe in them, because they think it is impossible for everybody to do it, but I believe that it is a good thing, simply because it shows that these things can be done more economically. You are getting at the economics of agriculture when you are able to produce a large amount per acre, or a large amount per cow.

Now, on the care of the cows and the feeding of them—Mr. Heaps made the statement to me the other day that was roughly this, that with less cows we were getting more milk here in the Baltimore shed. After the T. B. test had taken out a lot of the cows we had previously, we got a whole lot more. Why? Simply because in a lot of these herds we had cows that were boarder cows. They were way down below the average of production not only in the shed here, but in the State. That is what makes milk expensive, and that is what keeps the price down and makes it hard for the other fellow to produce milk because he is competing with a fellow that isn't a dairyman. He is competing with a fellow that is producing milk, and he is producing it cheap on timothy hay or something else and not paying any attention to the cost. He expects to sell that on the market and get just as much for it as the man who is a dairyman, the man who is really trying to produce milk and whom it costs a little bit more to produce milk than it does this fellow that really doesn't care.

You are eliminating a lot of those fellows. Of course, it is possible to eliminate a lot of these cows and eliminate a lot of these dairymen through the cow testing association, through the various forms of testing our cows. But it is a long process, and I believe that the part of an organization of this kind is to work along this line, because the time is coming, and it is not far off, when we must produce our

milk and our other farm products at less cost than we are at the present time. In other words, I believe that in ten years from now here in the Baltimore shed we probably won't have any more cows, but very few more cows at least than we have at the present time, and we will be producing considerably more milk. In other words, by eliminating the few low cows in our herds and giving that extra feed and that extra attention to the better cows we increase our production, and of course, save money on the feed of some of the cows that we used to have.

Another interesting thing that has come to our attention during the last year is the heifer proposition. I believe Mr. Heaps' figures for January 1, 1928, show that there were 13,500 heifers here in the Baltimore shed, and I am wondering, as I go around, whether or not these heifers are being raised as cheaply as they can be, and whether or not we are raising the heifers out of just the good cows or whether we are raising them out of all the cows.

There is a tendency right now with all the cattle that we have had shipped in, which amounts to something more than 10,000 for the last year in the Maryland shed, with the prices that they are being sold for, grade cows for as high as $250.00, for a lot of men to raise these heifers thinking that they can get the advantage of some of these prices a little bit later on, and they probably can. But unless we are raising the heifers out of the good cows and taking good care of them and raising them economically, I don't believe we are going to be any better off than we were before. In other words, heifers out of the poor cows with the cost of feed you have, up to freshening time, are going to be high enough that they are going to cost you more than you could go out and buy them for from the dealers or buy them from your neighbors when you need a cow a little bit later on.

Right along this line I have a preliminary report, and I have jotted down some of the figures on the board, of a heifer raising experiment that was carried on recently in Kansas. There were four lots of heifers in the Kansas State Experiment Station that were carried on this feeding test.

They were started at two weeks of age and allowed to suck the cow for two weeks. At the end of two weeks they were put on whole milk and then gradually on skim milk, and later on the skim milk was taken away from them and they were raised on the different kinds of roughage.

Lot No. 1 here, from the time they were put on the feeding test, that is two weeks of age, they got nothing but milk and alfalfa hay. They were given alfalfa hay as soon as they would eat it, and went right along and had that and nothing else up until the time they were four years of age.

Lot No. 2 got just the same treatment as Lot No. 1, except that they got silage with their alfalfa hay and milk. Lot No. 3 got the silage and alfalfa hay together with grain, and Lot No. 4 got exactly the same treatment. The difference in Lot No. 3 and Lot No. 4 is that the first three lots, 1, 2, and 3, were allowed to go to 30 months without freshening. Lot No. 4 freshened at the age of two years.

The cost of feed at freshening time at these first three figures represents the thirty months cost, $36.39 a head to produce Lot. No. 1, the alfalfa group. It cost $81.31 a head to produce Lot No. 2 which had silage, and that's where you account for your little less cost of feed when the silage that these heifers got was a little bit cheaper than the alfalfa. Lot No. 3 cost $102.23 to bring them up to thirty months of age when they freshened. Lot No. 4 was freshened at 24 months of age and cost $88.51 to raise to 24 months of age.

Here is the weight of the heifers at freshening time. These three lots freshened at thirty months of age, remember. Lot No. 1, with nothing but alfalfa hay and milk, weighed 767 pounds at freshening time, this lot weighed 802, this lot 1,015, this lot at 24 months of age, weighed 1,057 pounds, actually heavier at 24 months of age than any of these other heifers.

Here is the production for each year. Production records were kept on these heifers up until they were four years old or thereabouts, their first lactation period. That only included one lactation period for these alfalfa heifers. They produced 150 pounds of fat. Lot No. 2, in the first lactation,

produced 154, the second lactation just a little better, 161 pounds of fat. Lot No. 3 with grain, notice the increase here in production with this extra grain, 230 pounds of fat the first year, 222 the second year. Here we have Lot No. 4, 24 months old heifers, which naturally produced more each year. They had an average of 256 pounds of fat the first year and 302 pounds the second year.

Now the returns above the cost of feed. This report isn't quite complete on these Lots 2 and 3. They are practically the same. However, I am giving you the returns above cost of feed on this Lot No. 1, the alfalfa heifers, $73.66 as compared with the return for cost of feed for Lot No. 4, the 24 month of age heifers, of $165.40.

Briefly, you can see here from the figures that it cost $2.12 more to raise this group of heifers to two years of age than it did this group of heifers with alfalfa, and these had a grain mixture, not a lot, but about four pounds a day up until the time they freshened. It cost $2.12 more to raise this bunch of heifers to two years of age than it did to raise this bunch of heifers to thirty months, but the average return from Group 4 heifers was $91.74 more than the returns from Lot. No. 1 heifers.

In other words, men, if we are raising heifers it pays to feed liberally. I don't know that I know of anybody that produced milk economically, was a good farmer, that wasn't a good feeder. In other words, you can go into a man's barn and you can tell pretty well what kind of a feeder he is. I had an opportunity this week to visit a herd that had started one of the herd tests of the pure bred association. This fellow had quit, and I didn't like to see him quit, so I thought I'd look around and see about it. We went down to see him, went in and saw his herd, and we could see at a glance that this fellow probably had no business doing anything of the kind. The cows were thin, apparently had not been getting the feed they needed for an ordinary production, and a man like that I don't believe has any business trying to make records on his cows, because the fellow that can make records on his cows is the fellow that is a good feeder, the fellow that takes care of his cows, that is inter-

ested in them, that lives with them, that stays with them and takes care of them at all times with plenty of hay, plenty of feed, and plenty of grain.

I think we are too tight on our roughage as I said in the beginning. I was to another place this week. They have just lately changed managers. They have one barn there with 52 cows in it. He said that not quite a month ago, when he came, that this bunch of cows were getting two bales of clover hay a day. You can figure about how much hay that would be. He couldn't convince the fellow that that wasn't enough. So he said, "Tonight when we throw down the hay, you throw down two bales and a lot more and we will see how much they will eat." So they threw down several more bales of hay. They ate up the two bales, and he put down two more and they ate that, and they put down two more and they ate that, and they put down two more and they ate that, and he kept on until those cows had consumed eight bales of hay, the 52 of them, before they lay down and began to grunt with their sides hurting them.

That is the way to produce milk. Fill them up so they will lie down and grunt and chew their cuds and be happy, and you can produce it a lot cheaper on roughage than on grain.

The same way with your heifers. Give them all they can eat. You can't hurt a cow or heifer by giving them all the silage and all the hay that they can eat. Fill them up on it. You can hurt them on grain pretty quickly, but give them all this roughage they can eat.

Up at Beltsville they claim that a Jersey cow will eat enough good roughage to maintain her body and produce 12 pounds of milk a day, and that a Holstein cow will eat enough roughage to maintain her body and produce 16 pounds of milk a day. Then if you want to get more production, obviously, you have to feed some grain, have to supplement this roughage for most economical production and for highest production, which most good feeders know. In other words, it is a pretty good idea in taking care of the

cows to keep in mind that old Scotch adage. It is an old adage of a Scotch feeder that says, "Keep your feed just a little better than your cows." He says "steers" but the same thing applies to your cows. In other words, keep your cows hungry and give them all they will eat. Put through them all that they will take care of with plenty of water and plenty of salt, but keep their appetite up. When you see a cow lagging a little on her feed, take it away from her. Don't keep pushing it to her until it sours in the manger and she gets sick and tired of it, but pull it away from her for a day or two, and in that time she will come back and her appetite will be keen and she will go ahead, and she probably hasn't fallen off a lot on the milk.

To keep my promise I must stop.

MR. HARRY: How many of these heifers were bred heifers?

MR. BARKER: It didn't say what breeds were represented. Probably they were mostly Holsteins and Ayreshires. They have Holsteins at the Kansas Station, I happen to know.

MR. HARRY: They must be according to that butter fat.

MR. HEAPS: Have you anything on the average production of cows?

MR. BARKER: Yes, the average production of the cow in the United States has been coming up gradually the last ten years, not so very fast, though. I can remember when I was in extension work in 1913, the average production, I believe, at that time they claim was about 3,200 pounds per cow, and at the present time, according to the U. S. Department of Agriculture, it is only about 3,700 pounds. That is 500 pounds of milk in 15 years. That is not so fast. I don't think with that in mind that we are going to overdo the production for some time.

The average in Maryland is 4,600 pounds per cow. In the cow testing associations in Maryland the average production is 7,400 pounds.

MR. HARRY: Can you give it in fat as well as in milk?

MR. BARKER: No, but in the fat for the United States, it is 180 pounds, and in Maryland it would be little bit more than that, about 195, I imagine. Here in the Baltimore shed

the average milk production according to the milk that was sold in 1927 and 1928 we figured the other day as about 5,500 pounds. So while the average per cow here in the Baltimore shed is about 900 pounds above the average of the State, at the same time, it is about 2,000 pounds or about 1,900 pounds less than the average of the cow testing associations.

MR. HEAPS: It is quite a little above the United States average.

MR. BARKER: Yes.

QUESTION: Where would you get the milk to feed the heifers?

MR. BARKER: It doesn't take a lot. I think there is enough milk produced on the dairy farms in Maryland to feed a few of these calves.

MR. HARRY: When a person ships whole milk, what would you recommend feeding the heifers with?

MR. BARKER: I'd start them on whole milk. I don't think there is any substitute for starting calves on whole milk. You might be interested to know that at the present time there is a calf-feeding trial going on at the University of Maryland where we are attempting to work out this very thing. Dr. Mead and Mr. Ingham are working on this, and they can tell you more about it than I can. But we are working there to find out what some of these substitutes are. About the best substitute that any of the stations have found out so far is powdered milk, and so far in the trial at the University of Maryland it looks as though the powdered milk is going to have a little advantage over everything else, powdered skim milk.

MR. HARRY: About six weeks ago I bought some dried buttermilk, which has more fat than the skim milk, and it was highly recommended. My heifers certainly do like it and are doing well on it.

MR. BARKER: I wouldn't see any trouble at all in feeding buttermilk instead of skim milk. It is getting your stock used to it, feeding them the same every day. If they get used to powdered buttermilk, which probably is a little higher acid and it is given to them every day at the same

time and in the same amount, they will probably do as well on it as skim milk. Skim milk is generally fed, however, to live stock instead of buttermilk.

MR. HEAPS: What is the difference between powdered skim milk and powdered buttermilk?

MR. HARRY: They are both the same price. We mixed ours with the feed dry.

MR. BARKER: Do you feed yours dry, Mr. Hoops?

MR. HOOPS: No, as a liquid.

MR. BARKER: Do you feed it warm or cold?

MR. HOOPS: Cold.

MR. BARKER: Here is an interesting thing. One of these men is feeding skim milk dry and one is feeding it as a liquid.

An interesting thing about this group of calves that are on now up at the University is just that fact. The calves that have been on dry feed, that have gotten this skim milk and have been getting it all the time dry as compared with those that started out with it wet or in a liquid are, I really think, the best looking bunch of calves of the lot. So far as gain is concerned, there has been very little difference, but the appearance of the calves that get just the dry skim milk in the feed, is just as good as those that have been getting the liquid, in fact, a little bit better.

QUESTION: Are they getting the same quantity?

MR. BARKER: As nearly as they can be fed it in the grain mixture.

MR. HARRY: It is less trouble dry.

MR. BARKER: Yes. If there are no other questions, I appreciate the opportunity of being here today, and I hope that in the future we will get better acquainted and get farther. Thank you! (Applause).

PRESIDENT SNADER: Unless there is some one here who has something to say, this concludes your program.

Perhaps we could take up a little time discussing this differential, Mr. Heaps suggests.

MR. HOOPS: Mr. Chairman, I think if we could have a cent differential we'd be glad to accept it, we have been getting the other end of the deal for so many years.

MR. HARRY: I will second that.

PRESIDENT SNADER: We will discuss that now. I'd like to hear from the Holstein people on that as to just what they think along that line.

MR. HEAPS: I suggest this for this purpose. We have discussed it in our Board meetings, I have discussed it lengthily with individuals that come into the office, and as I said a while ago, we don't want to bar anybody from shipping milk. We don't want to bring about anything that is going to be detrimental to any breed of milk producing cows, and I thought that we had a few minutes here to discuss this. I don't believe any of us are so hungry yet; I guess most of us had late breakfasts. I personally would like to get the sense of this group of men as to just what is the best thing to do in a case of this kind. I think we are facing a problem that at least by spring something will have to be done on.

What is the best thing to do? You don't have to pass motions to do things. I'd like to hear from some of these men that I know have ideas along this line. We don't have to go into an argument or have any resolutions passed.

MEMBER: Isn't separating the only thing for a low test man to do to standardize the milk? You can't change the cows right away.

MR. HEAPS: Yes, that is one thing we have objected to, the Health Department jumping in and enforcing this ordinance, because it is impossible for a man to adjust his production immediately other than by separating, and as I said a while ago, there are many, many, you'd be surprised how many shippers who would not justify the expense to get a separator to separate a little bit of their milk in order to standardize it.

There may be, this has been put up to me at least, that there are numbers of herds that may have some very low producing cows that could be disposed of. I will cite a case of a man in Harford County who wrote in a number of letters, and he was very insistent that the laboratory had absolutely made a mistake in his butter fat, that he was used to getting a test of around 3.9, and his milk dropped down to 3.2, 3.1 and 3.3 and remained there a number of

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months. We checked on this man's milk; that is all we could get out of it. The other morning I met him and he said, "I must apologize. I thought you fellows were wrong, but I found out you weren't. I had the milk from my individual cows tested, and I found—I had put in a lot of heifers and additional cows, and I found several of them were producing milk as low as 2.8 and 2.9. There was nothing for me to do but get rid of them. I don't want that kind."

I think we may find that in many of our herds. We have a few individual cows that are giving a very low fat, and it might be profitable to dispose of those low fat producers, and it would help the cause very much, inasmuch as this low fat is most likely to strike us the heaviest in the spring and summer months. Throughout the winter months we probably can get along all right. So there is a possible adjustment in our herds by knowing what individual cows give. There ought to be some tests made in herds to determine that.

I think the cream separator is possible in the herds where there is enough milk being produced to justify a man to go to that trouble to standardize his milk, but I don't believe it is practical for us to recommend that procedure knowing as we do that there are many, many herds producing 15 and 20 gallon milk, and in those herds I don't believe the separator is the solution.

MEMBER: What step do you recommend to a man to take if his milk is 2 or 3 or 3.5?

MR. HEAPS: I can only tell you what happened prior to 1926.

MEMBER: I mean according to the new regulation.

MR. HEAPS: There is no new regulation. There is no change in the regulation on butter fat. It is the same as has been in existence in Baltimore ever since I have shipped milk, 3.5.

MEMBER: I mean about the differential. On those regulations there is one part of it where you sign that you consider milk below 3.5 unwholesome. The ordinance says so, and you sign the agreement, but is it?

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MR. HEAPS: We are getting too deep when we go into that, because I don't know. The Holstein man, of course, would say it isn't. I am not here to say that it is.

Mr. Snader has just handed me a petition that was presented by Mr. Sundergill and signed by 25 Holstein breeders. I will read it to you.

Mr. Heaps read the petition.

MR. HEAPS: This was just handed to me. I didn't know about it before. I am glad it was presented at this time so this will open up a real discussion.

It has been suggested by Mr. Crawford, who is a Holstein milk producer, that it might be wise to have a vote on this petition in order to guide the directors as to the sentiment of our producers of Holestein milk. I tell you frankly, men, this is something that the Board of Directors has tried to handle in a most expeditious way. It is a big problem, and while there is no argument about it, I don't think there can be, that a three-quarters differential is absolutely fair to all producers, because the low producer then will still be getting a higher price for his butter fat.

Last October down in Memphis at the national meeting I was discussing the dairy industry with Mr. Glover, and we must admit they have kept pretty well a pace with the industry. He is a producer of Holstein milk, has two large farms with over 100 Holstein cattle. I mentioned this problem, and he replied, "I don't see why everybody in your territory wouldn't produce Holstein milk. I am a Holstein producer, but that is unfair to the other fellow."

Some one here asked what the difference would be. It would be this: The price on 3 per cent milk on a half-cent differential is 28 cents and under three-quarter differential 25½; 2½ lower than it is at the present time, and the price of 5 per cent milk would be 2½ cents higher. So there is a variation there of 2½ cents a gallon higher on 5 per cent and 2½ cents per gallon lower on 3 per cent milk.

Now, the great question is, does that differential justify the production of higher fat milk? I had a pure bred Holstein dealer come in the other day in reference to this application for a permit, and he said his milk would be con-

demned because of low fat. He said, "I have got all pure bred Holsteins and want to keep them." Then I mentioned to him the fact that there had been some discussion in referance to the change in differential. He said, "That is perfectly satisfactory to me. It is only fair. I can't produce high fat milk; I can't afford to do it. I can make more money producing our kind of milk than anybody can the high fat."

That is the expression of that Holstein breeder, and I have heard others say the same thing. But the fact is, we have got this problem. What is the best thing to do? I know that a man hates to give up a thing he has got, but we have got a choice somewhere along the line of this problem to make. Are we going to allow the Health Department to go to the point and say that any man that produces 3.5 milk must be excluded, or are we going to do something else?

The thought we had in mind was to try to work out some plan, and then ask the Health Department to give us time for the thing to adjust itself, whether it is in a changed differential, whether weeding out low fat producers, or whatever it is. But we certainly object to the Health Department jumping up on some specific day and saying that thereafter all milk must come into Baltimore with 3.5 or better butter fat. I think that would be a calamity, and I don't want it, and I know you don't want it.

Mr. Crawford has suggested it might be a good way to get the sentiment of this crowd. Some of you people won't talk here today, but you will after you get out around the blacksmith shop or post office. When a man gets in his own meeting he certainly keeps still, but oh, how he will talk when he gets back home.

MR. MACY: There is one thing that seems to be very evident in this situation. Certainly the Holstein man should not get one penny less than he gets today. I can't imagine any proposition looking to any reduction in price in any shape, form or manner of the Holstein man. Is it practicable to arrive at a percentage of butter fat as the dividing line where that below it would receive the same as it does today? That is no disability to the Holstein owner,

and above that line of demarkation an increase as a stimulation to the increased butter fat, the higher butter fat cow.

If there has been a situation where due to high production of low butter fat cows, there is an excess of fluid milk in excess of the consumption of it, may not the whole question be approached in a practical manner by inducing the increase of butter fat with a consequent reduction in volume? Therefore, how can you approach this question, how can we who have no knowledge of what total delivery of milk in the Baltimore market is as compared with the consumption? I am sure I can't.

MR. HEAPS: In answer to your question I can say this, that Baltimore has the lowest delivery cost of any city I know of in the United States of its size. Just as an illustration, Baltimore is paying 33 cents a gallon for the milk and selling at 14 cents a quart, whereas, Chicago is paying 21 cents a gallon and selling at 14 cents a quart, making their 12 cents a gallon difference in the spread. Baltimore today is selling for seven cents a gallon narrower margin than it did prior to 1918, and I believe I am almost safe in saying that the distributing costs in Baltimore today must be at least twice what they were prior to 1917 and 1918.

The reason for that has been the work that Dr. King did in this market years ago in increasing the wagon load of milk. It is too big a story for me to go into, but anyhow, in years gone by there were wagons running around with a little bit of milk delivering a few quarts here and there, and they figured their quart on that basis. The wagon load in Baltimore today probably is as great as any city that there is, and greater probably. You can go and find any amount of wagons that don't deliver fifty gallons. The study of this matter and the practice of Dr. King's recommendations was back in 1919 and 1920, and it has brought about these results.

Now, your line of thought, if I get your question, is that the price remain the same as it is today, below 4 per cent milk, and that an additional premium of 2½ cents a gallon be added above 4 per cent. Who is going to pay the 2½ cents a gallon? Why, if you just know what we have been up

against all these years you would feel it the greatest waste of time if you would undertake to call a conference of dealers and ask them to increase their price 2½ cents a gallon on present market conditions.

Now, the dealer is perfectly willing to adopt the three-quarter differential, but it is out of the question, as far as my knowledge goes, to think of working out a plan and demanding that the dealer pay 2½ cents additional for butter fat, because if every gallon of milk in the Baltimore market was excluded there would still be any amount of milk in Baltimore. How in the world are we going to ask any man to reach down in his pocket and pay for a thing that he doesn't have to have and doesn't need? That is just about the situation, bluntly speaking.

MR. MACY: I didn't state 4 per cent, nor did I say 2½ cents. I don't know anything about the figures.

MR. HEAPS: I am only using the figures.

MR. MACY: The thought in my mind underneath it all is, does not the consumer of milk in Baltimore want butter fat?

MR. HEAPS: Yes.

MR. MACY: After all is said and done, isn't butter fat a salable article?

MR. HEAPS: Yes.

MR. MACY: Then may you not go to the dealer in milk and deal with him on the basis of butter fat? Where is the disadvantage and wherein will he object?

MR. HEAPS: The price of milk is based on 4 per cent. The dealer is paying on the basis of 4 per cent, buying 14 cent milk based on 4 per cent fat. Whenever it goes to 4.2 the dealer is taking a cent out of his pocket and giving to the consumer for which he gets no return, and he objects. That is what happened in 1926.

MR. MACY: He gets the 2 points in butter fat?

MR. HEAPS: He gives it away. What advantage is it? The consumer gets it. He doesn't charge for it.

MR. MACY: Doesn't the consumer of the milk get that 2 points?

MR. HEAPS: Certainly. Therefore, the dealer simply

paid a cent a gallon above the price and sold it for the same price. He isn't willing to do that, and most men are about the same way, because that is narrowing his spread another cent which he says he can't stand, and neither will he pay a premium for fat above 4 per cent and pass it on to the consumer without the consumer paying for it.

We don't think it wise at all to attempt to increase the consumer's price. I, for one, would be absolutely opposed to that. There is no need of it that I can see. What would the public say when there are 8,000,000 gallons more milk produced than is consumed if we said, "Mr. Consumer, you have got to pay more money for it?" I know he wouldn't stand for it.

MR. MACY: Mr. Heaps, in my ignorance, I have spoken on the assumption that the milk goes in to the dealer and is graded and then goes out to the consumer at a certain percentage of butter fat, that one man sends in his milk at 5 per cent, another one sends it in below 3.5, that the two lots go together, and then in their technical way they test it and regulate it to an alleged 4 per cent.

MR. HEAPS: That is exactly what the Health Department regulations and city ordinance prohibits, is standardization. They cannot add to nor take from. They have got to sell the milk as they receive it.

MR. MACY: Then every point I have raised is based on misconception.

MR. HEAPS: If the dealer could standardize we could adjust that premium because he'd only be buying butter fat. He could turn around and sell butter fat in cream. I don't think it could be sold at any 2½ cents a gallon, the cream value wouldn't warrant that price to put it in cream. It is only that 2½ cents based on butter fat in the milk, not in cream. Therefore, there could be a premium, but not that much.

MR. HOOPS: For a point of information, how do they get at the quality of the milk so the man on this street gets the same quality as the man on the other street unless they standardize it?

MR. HEAPS: He doesn't. That is one of the unfortunate

things. If they could always put out just the same quality of milk all over the city we wouldn't have these dips as we have this past summer, because the total average over the market was only about 3.80. That was the lowest it got. Yet, we found milk on the street as low as 3.4, 3.5, and 3.6. The fact is, no dairy ever had means to bring the total supply of milk into one great, big vat and mix it up. If that was possible, then our average on the street would be uniform. They do try, however, to mix it as best they can by having it arranged to bring trucks from this particular section or that section going into one of those tanks as near as possible to mix it. In other words, they know pretty well what the quality of milk or butter fat on these trucks in this section is and these trucks in this section and from the different cooling plants, but it is impossible to get that volume of milk into any container where they can absoutely have it uniform all over the city.

You may find you can go on certain streets and buy a bottle of milk and find it 4.3 or 4.2 milk. You might go right across on some other street and get a bottle of milk and find it 3.7 or 3.8.

But in doing the best we can with that, I don't know that that is just the most serious problem, because if we can maintain our standard under our present production of around 4.2 the dairy can get by pretty well, because they can then keep in their cream supply the real high fat milk, but when the total average gets down they are in trouble.

MEMBER: Bringing in that 3.3 milk and mixing it in the same vat with other milk, isn't that standardization?

MR. HEAPS: No, not in the sense of standardization because it may be 4 or 4.2 or 3.8. The fact is that the Health Department permits you and me to ship milk to Baltimore and on that permit the dealer buys that milk, and if the Health Department was to find that milk below standard on the street their alibi is, "All right, I am giving the consuming public just exactly what you allow me to buy. Therefore, if this milk is wrong you allowed me to buy it wrong." What does the Health Department do? Goes back to the

permits and finds that the milk is not according to city regulations.

MR. WERTHEIMER: A possible solution is to have two grades of milk. I don't suppose the dairymen would want that.

MR. HEAPS: It is too expensive. We'd have two grades, but only one price.

MR. WERTHEIMER: I said I'd have to get out of business if that went through. I am a Holstein man, but when I send my milk to market I expect the dealer to give me what I have coming to me. I don't expect him to give me any more. What difference is it to the dealer whether he gets 3.5 milk or 4 per cent milk so long as he is paying for what he gets?

In connection with what you are saying, two or three years ago one of the large dealers in Baltimore came to see me saying that he wanted Holstein milk. I never could understand why he wanted it. He said, "We are going to take it down to our plant and standardize it and make 4 per cent milk." I could give you the name of the gentleman who came to see me. That is against the law on standardizing, isn't it?

MR. HEAPS: You don't need to give me his name, because I know who he is.

MR. WERTHEIMER: I never could understand why he wanted Holstein milk when it is a misdemeanor to standardize milk. Now the man that has Guernsey milk, 4 and 4.5 per cent, do you mean to tell me the dealer sends that out without standardizing it?

MR. HEAPS: I didn't attempt to tell you.

MR. WERTHEIMER: That is the inference I got. If the dealer who is shipping his milk to the consumer, if he is shipping milk at 3.5, wouldn't it be better for him to buy Holstein milk than higher priced milk if there is no difference in the prices? No man who is producing 3.5 milk has asked that he be paid the same as the man who is producing 4 per cent milk; that would be unfair. But for heaven's sake, pay him for what he is sending.

MR. HEAPS: That is exactly what we are trying to do,

trying to work out some plan so that the Holstein man will keep what he has got, and the Jersey man the same, etc.

MR. WERTHEIMER: Don't you think it would be a good thing for this organization now that we have a lot of people producing Holstein milk and we know they can't produce 4 per cent milk, to give them for what they do produce?

MR. HEAPS: It isn't a dealer problem, it is a Health Department problem. You know what happened in Washington. They went in and weeded out their low producing cows and our dealers went over and bought them.

MR. WERTHEIMER: Up to three or four years ago a man who couldn't get a permit in Washington found a ready market in Baltimore.

MR. HEAPS: He did. But excuse me for criticizing the market—Washington sets a good deal of store on whether a man has a strawstack in his yard or whether he has a boiler that has never had a fire in it, or whether he has a few more of those things. Baltimore doesn't do that. We try to know, and I think our Health Department actually does know, the quality of milk that is coming into our market, which I have been unable to find in Washington. I don't think they know there whether they have got an average bacteria count there of 300,000 or 300,000,000.

MR. WERTHEIMER: They have been passing something there, but as far as I am concerned I am ready to meet all the requirements of Washington City. I suppose 75 or 80 per cent of the fluid milk comes into Washington. They recently passed some laws that a man has got to have a dairy house so many feet from the barn—according to the new rules and regulations he is compelled to bring it within fifty feet, and some time ago they said they had to have a tank to sterilize, and a year ago it was something else. We do try to meet all the requirements.

But I say, if we are shipping Holstein milk, pay us for what we send, and no more.

MR. HEAPS: That is what we are trying to do, and no more.

QUESTION: Do the consumers actually want 4 per cent milk?

MR. HEAPS: Believe me, they do. We thought they didn't know the difference, but we have concluded that they do now.

MR. WERTHEIMER: I had a man tell me they were using Holstein milk for irrigation purposes in the West! (Laughter).

MR. HEAPS: Well, that is all right. The Holstein cow is a good cow, and we want to keep her and be fair to her, and we don't want anything that is going to rock the boat and be any disturbance. We don't want anybody to be forced out of business, we don't want anybody to lose money because the milk has been excluded. You can't blame us. It is the Health Department. If we want to take that attitude we can. But we don't. We like to work with the Health Department and get them, if possibe, to do the square thing whereby you people and everybody can go on and produce the kind of milk they are now producing without being excluded. That is what we are trying to do. I don't know that we will ever get any thanks or credit for it, but nevertheless, that is the argument.

We had a little time, and I think this has been a very valuable discussion. However, it just lacks one thing. I will agree with everything that has been said, but there is just one thing hasn't been said. You haven't told us what we ought to do.

MR. MACY: Have that ordinance changed so the dealer may standardize.

MR. HEAPS: You can count me right now opposed to it, because then we will become a dumping ground for milk, which I have always opposed. You havent any idea just what that 3.5 standard has meant to the Baltimore market. I can tell you, back in 1919 and 1923 in that period when that war reaction was taking place and milk dropped from the high peak of 42 cents all the way down to 25 cents, what would have happened if we hadn't had a 3.5 standard. Because some of our dairies owned country places in the State of New York, that milk was bought by our dairies and was being delivered here, and had it not been for the 3.5 standard we never could have weathered the storm.

MR. MACY: I have not made myself clear. I am not sug-

gesting any elimination through the minimum 3.5 standard, but as I understand it, the dairies are unable to standardize the milk after they receive it because of an ordinance. If that ordinance could be modified so that the dairies may standardize their milk at whatever percentage of butter fat they may decide on, not interfering with the minimum, wouldn't that go a long way to solving this?

MR. HEAPS: The minute you do one thing you eliminate the other, because if I want to take advantage of that I can go into another State and buy 3 per cent milk and bring it in here, which I can't do now and buy just enough of the high testing milk to bring it up.

MR. MACY: Not if the ordinance calls for 3.5 minimum.

MR. HEAPS: But you can't say a thing, that you can't buy anything but 3.5 milk and have the dealer take the advantage whenever it goes above 4 per cent and put it in his pocket. Are you speaking now of the farm or the city?

MR. MACY: I am speaking of this problem which confronts the association to bring about a proper value of the varying kinds of milk that are being delivered, and if the dairyman were permitted to take away and to add to, he would then be in a position, and he would be prepared to pay for higher butter fat.

MR. HEAPS: I have to answer your question by butter fat. What good would your 3.5 standard be if you were going to allow dealers to standardize, because you must have in mind he must buy, you must desire him to buy the low fat milk which would make it possible for him to buy it in this State or some other State, and all he would have to do would be to collect his ingredients and make a certain kind of milk. As long as the 3.5 standard stays and he is not allowed to standardize, the producer has some bargaining power in the supply that he buys, but the minute you take it away from him you throw the door wide open in which he can juggle, and you don't know anything, you don't know where he is buying or what he is buying. Your 3.5 standard is a very great safety to this market.

Now, publicly we probably wouldn't like to go out and say all the things we probably say in here, but just so long

as the Health Department can show that they have protected the dealer to the point where he is getting what he pays for, then the consumer should not be concerned as to whether one man's milk is 3.5, 3.3, or 4 per cent. But he must recognize as a general thing the State law. He can't just say, "I don't believe in the State law and I am not going to live up to it." You have got to go to the Legislature to do something about that.

I think this is a problem that we producers ourselves ought to work with the Health Department on and try to adjust rather than going out into the Legislature or City Council or anywhere else and getting a lot of things started that we can't get stopped. Some times you can get some legislation you don't want when you start to get what you do want, and you get some action that you don't want. So I think the less we do about this from a legislative standpoint, the better off we will be. It may adjust itself. My guess is, however, that a three-quarters differential will adjust it, and it won't put the Holstein men out of business, and I wouldn't be surprised if in two years' time we won't raise our standard to 4.2 instead of 4 per cent, and if it goes to 4.2 my guess is we will have to drop back to a half-cent differential. That is my prediction of what would happen, and frankly speaking, my own personal opinion is that due to what we have gone through, taking the picture as a whole, the market in general, I think that the safest and sanest thing would be if we could get the Health Department to lay off and apply our three-quarters cent differential up to the time that it does react to the point and brings about the desired result. I think that is the sane and sensible thing to do. We are monkeying with a lot of dynamite when we undertake to go in and change an ordinance or get legislation or simply maybe sitting still and doing nothing and letting the Health Department come down with one swipe and cut a lot of milk off the market.

MR. BARKER: I understand from the figures, the data from the Health Department and some of the other figures that there are only about 8 per cent or a little more maybe of the producers in the shed that are below 3.5.

MR. HEAPS: There is a small number, but they are usually very large ones.

MR. BARKER: Take for instance, your own statement that you can get the Health Department to lay off for a while and help adjust it. I think that is no more than fair, because this thing was sort of invited by the plan that was allowed in buying these cows. Now, if they co-operate for a little while longer, why woudn't it be a good idea to take these producers that are below 3.5 and do a little work on those fellows, work with them and see if we can find out what the trouble is?

I am inclined to think that there are quite a few of these men that are below 3.5 that really aren't dairymen. They have all kinds of cows. Some of them, I know, have pure bred Holstein herds, and I also know that with men that have pure bred Holstein herds some of these men have just recently gone into the business. They went out two or three years ago and bought a lot of cattle from Wisconsin and some place else, and as you say, probably they didn't get the high testers, and as a result, their test is down. Now, then, by working with this 8 per cent, wouldn't it be possible to raise the test on the Baltimore market and eliminate a lot of these fellows that are producing less than 3.5 milk by probably taking two or three cows out of their herds, which woud raise the average test of some of them? Maybe some of them have whole herds that are low testers, and that fellow, of course, is kind of out of luck. He will have to do something to raise his test. But I believe that there are something over 300 producers that are below 3.5, and it will be possible to eliminate maybe half of them, and if you can raise the average above 3.5 of half of these 300 producers, I believe the average test on the milk on the streets of Baltimore is going to be higher than it is at the present time.

MR. HEAPS: That plan has already been proposed and some little work has been done on it, I understand, and I think it is a very good work. But I think, Mr. Barker, you still have an element there that you haven't just taken care of and that is the fellow who wouldn't. We don't want to be in the position to see the fellow who won't do anything excluded.

The real problem that I see in this differential thing is not entirely to put the Holstein breeder today out of business and put him in the Jersey or Guernsey business, but to keep on that fellow who is in the Jersey business, keep him producing and maintaining, and an additional supply, we will say, of higher testing milk to mix with the other fellow's. I think there is probably where our greatest trouble is, that we are getting less high testing milk. The tendency is to go from the high-testing milk to the low-testing milk, and if it isn't checked, it is dangerous. How are we going to keep the fellow who is producing high-testing milk there?—because it has got to pay him to stay there. How are we going to handle this fellow who is producing low test milk? He says, "Here, we have got to raise this market in order to maintain it and get the market full of milk." The other fellow is simply in business to keep this fellow in business.

MR. PATTERSON: I don't see any way to raise the standard unless we pay for it, pay more for high-testing milk. I think the sense of this meeting is that we ought not to raise the differential, if it is necessary to make any change, however, that we raise it to three-quarters and give it a trial. We all know that the Holstein milk has been paid more for than the Jersey milk on a butter fat basis, and there is nothing unfair about raising the price. I don't believe there is any other way of increasing the test on the Holstein than by doing that very thing, and I move that it is the sense of this meeting that if it is necessary to make any change the association is agreeable to raising it to three-quarters of a cent.

The motion was duly seconded.

MR. HEAPS: It has been moved and seconded that if necessary to maintain a market here for all of our milk that the association be instructed or advised that the differential be changed to three-quarters of a cent. Is there any discussion?

MEMBER: Does that three-quarters apply to all changes, a whole differential—

MR. HEAPS: Instead of a half cent it would be three-quarters above and below.

MEMBER: It is pretty hard on most of you men.

MR. HEAPS: There is only one thing I see that we can do, and that is that the association can say to the Health Department that we are going to enter into this, or that we take some stand and go to them and say, "Here, if you withhold the enforcement of this regulation and give us a chance to try and bring about this reaction by this method—we have put something up to them, and if they turn us down they have got to go their own way," but as long as we do nothing and say nothing, propose nothing, it seems to me that we are just walking towards a precipice all the time; we don't know when they are going to do something. We don't know when they are going to say, "We brought this thing up last summer, and you haven't done anything." That is the thing that is confronting us. It is not a question of what we want to do. I have stated over and over that I prefer much to let the dog sleep. But somebody kicked the dog, and it wasn't the Maryland State Dairymen's Association that kicked him by any means.

MEMBER: I don't think there is any barometer in the world that will influence the business any more than this very thing, this differential business. When the differential swings the pendulum over to a preference in economic value, the Jersey cow or the Guernsey cow, there is no doubt that there are going to be more calves raised of that breed, and no doubt the dealers will bring in more of that breed. You expressed one of my observations when you said the dealers were bringing in Holstein cattle. I believe that thing alone has been responsible for this pendulum swinging from desirable tests in milk to a less test in milk, and the only thing I see to do is to take the differential in, and have the pendulum swing so far the other way they will be ready to change it back.

MR. HEAPS: I figured that would go without saying. Whenever we get to where it is going to cost the dealer money, why, we are going to hear from him. We won't have time to hear from you, we will hear from him.

MR. PATTERSON: With the three-quarters differential, the Holstein man is still being paid a higher price for his butter fat.

MR. HEAPS: The all important thing is, he has been getting something and he doesn't want it taken away. That is only human. I haven't any argument with any man who feels that way, but the thing we have got to contend with is the problem of this market. I am sure if it were put to a vote the Jersey and Guernsey men would vote on the three-quarters, and the first reaction would be that the Holstein men would vote against it.

MEMBER: The Holstein man thinks it is going to be pretty hard on him to drop that quarter cent point, but as I see it it will be a great deal better to do that than have the Health Department come down all of a sudden and say he has to discontinue shipping or else raise his butter fat immediately. The way I see it, it is the only way the matter will adjust itself. It takes a little time, a couple of years, but I really feel that this differential will adjust itself.

MR. HOOPS: The differential certainly hasn't been fair to the high fat test breed, and it seems to me that the time has come when we should take action and make that change.

MR. HEAPS: Is there any further discussion? If not we will put the question. All in favor say "aye" contrary "no."

The motion was carried with one opposing vote.

MR. HEAPS: Well, I think we have had a profitable period of discussion on this thing. I think you people will get a certain reaction from getting the other fellow's viewpoint, and you will certainly get a reaction in realizing what we are up against in the market, not as individuals, but as a market, what is the best thing to do for this thing and maintain our present market. That is our problem.

It is way past time to adjourn. I appreciate your staying here and your expression in this matter, and I think we all feel a little enlightened on it. I know I do.

The meeting adjourned at one-thirty o'clock.

REPORT

OF

Twentieth Annual Meeting

OF THE

Maryland State Beekeepers' Association

BALTIMORE, MARYLAND

January 9, 1929

SECRETARY'S REPORT

In most parts of Maryland the honey flow was interferred with by heavy and frequent rain fall. Late flows, from sweet clover particularly, on the Eastern Shore and a fairly good flow of nectar from fall flowers helped to prevent the season from being a total failure. The yield in Western Maryland was generally better than in the other portions. Returns from 58 beekeepers representing twelve counties showed an average of 28.96 pounds per colony. In Frederick County the return was 41 pounds and in Montgomery County the yield was 47 pounds per colony.

A beginning was made during the summer of 1928 in inspection for bee diseases. Mr. G. J. Abrams was employed on a part-time basis for the inspections. A brief resumé by him of the disease condition is included in this report.

The usual series of winter meetings and a well attended field meeting at College Park on Farmers' Day constituted the activities of the Association. The financial statement is appended.

MARYLAND STATE BEEKEEPERS' ASSOCIATION
FINANCIAL STATEMENT

From January 3, 1928 to January 9, 1929

Date	Check No.		Expenditures	Deposits
1/ 3/28		Balance on hand		$65.81
12/21/27	92	Gleanings in Bee Culture—for 1-year subscription	$ .50	
12/21/27	93	American Bee Journal—for 1-year subscription	.50	
2/ 2/28	94	Gleanings in Bee Culture—for 1-year subscription	.50	
2/21/28	95	American Bee Journal—for 1-year subscription	.50	
2/29/28	96	S. G. Crocker—for 2 cases of honey	10.80	
6/14/28	97	Maryland Farm Bureau Federation—dues	20.00	
10/29/28	98	George J. Abrams — for signs to be used at exhibit at American Dietetic Association	9.00	
12/22/28		By deposit		13.00
Signed: ERNEST N. CORY.			$41.80	$78.81 41.80 $37.01

APIARY INSPECTION IN 1928

BY GEORGE J. ABRAMS

During the spring and summer of 1928 requests were received from beekeepers for apiary inspections. As in previous years, these inspections were conducted and where diseased conditions were discovered, instructions for eradication of the infections were given.

Particular attention was given to American Foulbrood and the following table refers only to this disease.

APIARY INSPECTION
1928

County	Apiaries Inspected	Colonies Inspected	Apiaries Diseased	Colonies Diseased	Per cent of Apiaries Diseased	Per cent of Colonies Diseased
Prince Georges	1	50	1	15	100	30.0
Baltimore	1	49	1	19	100	38.7
Montgomery	2	46	1	5	50	10.8
Caroline	4	101	2	13	50	12.8
Harford	6	209	6	34	100	16.2
Cecil	2	81	0	0	0	0.0
Totals	16	536	11	86	68.7	16.0

The per cent figures in the foregoing table are somewhat alarming, but may be justifiably attacked on the grounds that too few apiaries were visited to allow drawing truly representative conclusions. Slightly over two-thirds of these apiaries were suspected of being diseased by the operators, which suspicions lead to the requests for inspections.

What, however is significant, is the fact that five (5) of the six (6) counties visited harbored diseased apiaries which means that there exists in the State five known centers of infection. This condition is made doubly significant when it is pointed out that these five disease harboring counties are spread well over the northeastern part of the State, Southern Maryland and the Eastern Shore.

European foulbrood infection was discovered in only two apiaries, both of which also possessed colonies diseased with American foulbrood. Sacbrood was found to be very prevalent, it being found in thirteen (13) of the sixteen (16) apiaries inspected.

Talks with beekeepers disclosed a very significant condition. The great majority apparently know very little regarding bee diseases and many readily admit their utter lack of knowledge of the symptoms involved and their inability to recognize a diseased condition. They readily recognize an unthrifty colony, but are prone to attribute this unthriftiness to a poor queen, chilling or a poor season. Most of

the beekeepers possessed a fair knowledge of the fundamentals of disease eradication, but were woefully lacking in the knowledge of exact procedure.

SAVING FOULBROOD INFECTED COMBS BY STERILIZATION WITH FORMALDEHYDE GAS

BY C. E. BURNSIDE,

Assistant Apiculturist, Bureau of Entomology,
United States Department of Agriculture

A successful treatment for American foulbrood was discovered before the cause of the disease was known. This treatment, which consists essentially in the removal of all infected material, enables beekeepers to save the bees of diseased colonies. It was soon found that the hives could be made safe for use by flaming the inner surface, and that the frames could be used after being boiled in water. The infected combs, on the other hand, had to be destroyed. In an effort to save the infected combs, beekeepers and investigators began to experiment with drugs as disinfectants. A number of drugs known to possess disinfecting qualities were tried, and, after many attempts, formaldehyde was found to be the most effective for sterilizing infected combs.

Sterilization of foulbrood-infected combs with formaldehyde gas was first announced in America about 27 years ago by Prof. F. C. Harrison, of the Ontario Agricultural College. Harrison's report attracted much attention at that time and encouraged many beekeepers to treat their infected colonies and combs. Patterning after the method used in fumigating the sickroom, they at first used formaldehyde only in the gaseous state. The combs were exposed to the gas for a few hours or days in a tightly closed hive-body or tank, and then returned to the bees. Attempts were also made to rid infected colonies of disease by merely pouring formalin over the bottom-board.

At first there were many reports of success with the new method, but later the reports of failure greatly outnumbered those of success. Among those who claimed success was E.

W. Alexander, one of the foremost beekeepers and investigators of the time. He claimed to have successfully sterilized more than a thousand combs infected with "black brood" by exposing them to formaldehyde gas for four or five days in a tightly-covered honey tank. N. E. France, of Wisconsin, reported failure with Professor Harrison's method. He applied the disinfectant "double strength" and upon examining the apiary several months later found every treated colony infected. F. L. Morgan, of Illinois, also claimed complete failure with treated combs, as well as when the formalin was placed on the bottom-board of infected colonies.

Failure among beekeepers to distinguish between the two foulbroods may account for some of the conflicting reports concerning the success of Professor Harrison's method. In the light of our present knowledge of the action of formaldehyde on the spores of *Bacillus larvae,* it would seem that failure may be largely accounted for by too short a period of exposure.

During 1905 and 1906, owing to numerous failures with formaldehyde gas, beekeepers lost interest in the effort to save infected combs by sterilization. In 1920, Dr. G. F. White reported as follows concerning the efficiency of formaldehyde solution as a disinfectant for American foulbrood combs: "In 5 and 10 per cent solutions, respectively, of formalin (37 per cent formaldehyde) it was found that they were viable after 6 hours, and in a 20 per cent solution they were alive after 30 minutes. While the spores were alive in the formalin suspensions after these periods, the evidences obtained indicate that the chemical death point was being reached." He further says, "As the destruction of the spores with formalin is a question of hours only, it is possible in well-selected cases that use could be made of this agent."

Widespread interest was again aroused following the announcement by Dr. J. C. Hutzelman, in 1922, that American foulbrood infected combs could be completely sterilized by immersion for 48 hours in a 20 per cent solution of formalin in alcohol. This solution, now known as Hutzelman's solution, has been widely and successfully employed for steriliza-

tion of American foulbrood combs but, owing to the high cost, its use is often prohibitive. To reduce the cost of the solution, many beekeepers use water instead of alcohol as a carrier of the formalin. Dr. A. P. Sturtevant and others have shown that a 20 per cent solution of formalin in water is as effective a disinfectant for the spores of *Bacillus larvae* as is Hutzelman's solution. Doctor Sturtevant has also shown that a small percentage of the scales in sealed cells are not sterilized within the maximum period of treatment with either alcohol-formalin or water-formalin solution. This, he believes, explains the occasional recurrence of disease in treated combs containing brood remains in sealed cells. As a safety measure many beekeepers uncap all sealed cells before treating their combs.

In 1928, Jay Smith and A. V. Small announced separately successful sterilization of American foulbrood combs with formaldehyde gas. As a source of formaldehyde, Smith used formalin, while Small used farmalin-alcohol solution. The chief difference in the procedure used by these men and that used by earlier investigators is a much longer period of exposure.

Following these reports by Smith and Small many beekeepers began to treat their American foulbrood combs with formaldehyde gas. In the cases that have come to the writer's attention the period of exposure, the fumigating tanks, and the procedure as devised by the beekeepers varied considerably. Paraffine-coated hive-bodies, as described by Smith, were sometimes used, but more often the tanks were of larger capacity, in some instances holding more than a thousand combs. The formalin was either vaporized in a retort and allowed to enter the tank through a tube, or it was poured over the bottom of the tank or into pans on the frames before the tank was closed.

Many samples of gas-treated combs, accompanied by inquiries concerning their sterility, have been submitted by beekeepers to the Bee Culture Laboratory during the past six months. Letters have also been received asking whether or not the formaldehyde gas method could be depended upon. Not having been in touch with the work during the

course of the experiments, the Laboratory was not in a position to recommend or condemn the method.

From the cultural results of tests for sterility on samples of gas-treated combs submitted to the Laboratory, much can be determined concerning the degree of success that has been obtained thus far by beekeepers. In more than 90 per cent of the samples that contained brood remains in sealed cells sterilization was not complete, and in most of the samples in which sterilzation was complete the material was insufficient for a thorough test. Sterlization was usually complete in all the open cells. Since complete sterilization of all cells is essential, it is seen that beekeepers have almost universally failed in their attempts to sterilize American foulbrood combs with formaldehyde gas.

Because of the widespread interest among beekeepers in the use of formaldehyde gas for sterilizing American foulbrood combs, an investigation of the subject was undertaken at the Bee Culture Laboratory. This work is far from complete, but facts have already been determined which seem to be of importance. The results obtained thus far in experimental work at the Laboratory are more encouraging than those obtained by beekeepers. Cultural results from treated combs show that, under the conditions of these experiments, formaldehyde gas destroyed the spores of *Bacillus larvae* in open cells with a high degree of efficiency. Sterilization in sealed cells is slower than in open cells and ranges over a much longer period of time.

To obtain preliminary data on the rate at which sterilization is effected pieces of American foulbrood combs were treated in two-quart jars. Fifty or sixty cubic centimeters of concentrated formalin were added to each jar except for the purpose of comparison when a smaller quantity or diluted formalin was employed. During exposure the jars were kept at the temperature of the room or in an incubator at 37° C. (98.6° F.). At intervals of from 1 hour to 11 days after the jars were sealed pieces of comb were removed and tested for sterility. Sterilization proceeded much more rapidly than was at first expected. In open cells partial sterilization was effected after exposure for two hours, after

24 hours most of the scales were sterile, and after 48 hours sterilization was complete. In sealed cells partial sterilization was effected after about four hours' exposure, and after 24 hours about half of the scales were sterile. As the period of exposure was increased the sterility of scales in sealed cells was proportionally increased. Sterilization was complete in all the sealed cells after exposure for 11 days. It was found that sterilization proceeded as rapidly at room temperature as at 37° C. (98.6° F.), and that 10 cubic centimeters of formalin were as effective as 50 or 60 cubic centimeters. When formalin that had been diluted with four volumes of water was used, the rate of sterilization was somewhat slower. At 0° to 6° C. (32° to 42.8° F.) sterilization in 2-quart jars was considerably slower than at normal room temperature or 37° C. (98.6° F.). Sterilization was first noticeable in open cells after 3 days' exposure, but was not complete in either open or sealed cells after 15 days.

Standard hive-bodies were made air-tight by coating the inner surface with wax and covering the bottom and the top with wax-coated inner covers. Three-fourths of a pint of formalin, poured over the bottom, to provide a large evaporating surface was used in each standard hive-body. Ten combs were hung in the hive-body and the cover was sealed in place. All cracks were filled with wax to obtain a perfect seal. After seven days' exposure at room temperature all the open cells were sterile (a shorter period was not tried). Sealed cells were found to require a longer period of exposure for complete sterilization than was required in the two-quart jars. About 40 per cent of the sealed cells were not sterile after exposure for seven days. After periods of exposure for 14 and 15 days sterilization was still incomplete in an occasional sealed cell, but after exposure for 57 days it was complete in all cells.

Comparison of the cultural results shows that sterilization proceeds more rapidly in 2-quart jars than in standard hive-bodies. In order to determine if the rate of sterilization is influenced by the size of the tank, a tank of 120 comb capacity was constructed of sheet metal, and provided with a telescoping cover that fitted into a trough of oil about the

top of the tank, making an air-tight seal when the cover was in place. One gallon of formalin was poured over the bottom of the tank through a pipe in the cover after the combs were in place and the tank was closed.

Combs were treated for periods of 7, 14, 30 and 60 days. After seven days' exposure all the open cells were sterile, but approximately 10 per cent of the sealed cells were not. After 14 days' exposure sterilization was found to be incomplete in only about 2 per cent of the sealed cells. As was expected, no growth was obtained from any of the open cells. After 30 days' exposure sterilization appeared to be complete, since growth of *Bacillus larvae* was not obtained in cultures from sealed cells. Combs that were treated for 60 days were not tested for sterility since sterilization was complete in combs that were treated for a shorter period.

Formaldehyde gas is of about the same density as air; consequently it may be expected that within reasonable limits, when the formalin is at the bottom, the rate of sterilization will be about the same throughout the tank. In order to determine if this is the case, combs were treated in a tank 4 feet high. After exposure for 7, 14 and 17 days, combs that had been exposed at different distances above the formalin on the bottom of the tank were tested for sterility. A similar experiment was conducted with a tank 10 feet high by a beekeeper who sent to the Laboratory combs for sterility tests taken from different altitudes within the tank. The cultural results from these combs and those treated at the Laboratory show a difference in favor of the combs nearest the bottom of the tank. The difference, however, is so small as to be insignificant.

Pollen readily absorbs formalin vapor, and pollen plugs become saturated after two or three weeks' exposure. Upon drying the formaldehyde soon evaporates from the pollen. On the other hand, honey absorbs formaldehyde slowly and in proportion to the area of the surface exposed, but retains it for long periods. Honey that was exposed to formaldehyde gas was found by testing to contain considerable quantities of formaldehyde after it had been evaporated in an incubator at 37° C. (98.6° F.) for nearly five months.

Honey that contains much formaldehyde is poisonous to bees, and heavy losses may result when wet extracting combs or combs containing honey in unsealed cells are given to the bees after treatment with formaldehyde gas. Sealed honey absorbs but little formaldehyde from an atmosphere saturated with this gas. Absorption in sealed cells occurs through pores in the cappings; consequently the rate of absorption in different cells may be expected to vary considerably. Since wax is impermeable to formaldehyde gas there can be no absorption in case the cappings are without pores.

It has been shown by these experiments that formaldehyde gas is a highly efficient disinfectant for the spores of *Bacillus larvae*. In an atmosphere saturated with this gas at normal room temperature and 37° C. (98.6° F.) complete sterilization of the brood remains of American foulbrood in open cells is a matter of but a few days. At temperatures near the freezing point of water, however, complete sterilization was considerably slower, which indicates that the temperature factor is of paramount importance. Since the rate of sterilization was lessened considerably when the concentration of gas was reduced by diluting the formalin with water, it appears that a relatively high concentration of formaldehyde gas in the fumigating tank is also an important factor. Sterilization in sealed cells proceeds much more slowly than in open cells, as the gas is prevented by the cappings from coming into direct contact with the brood remains. The chances for success are, therefore, increased considerably by uncapping all sealed cells before treatment.

It does not seem advisable to attempt to sterilize combs containing honey in either open or sealed cells. Since honey in well-sealed cells absorbs but small quantities of formaldehyde, there would be considerable danger of recurrence of disease from this honey. Unsealed honey, on the other hand, absorbs formaldehyde slowly, but does not give it up readily; consequently it is unsafe to give the bees treated combs that contain honey in open cells. Combs from which honey has been extracted are particularly dangerous, but this danger may be avoided by thoroughly washing the combs before or after treatment.

On the whole, the use of formaldehyde gas for sterilizing American foulbrood combs seems to offer good possibilities, and experimental work should be continued. The labor and cost of treating combs with formaldehyde gas should be less than with alcohol-formalin or water-formalin solution, and the task is less disagreeable since the odor of formaldehyde may be largely avoided. Its frequent failure in the hands of beekeepers indicates that the chances for failure are much greater than with the immersion method. Until the facts concerning its use are thoroughly established and a reliable method for applying the gas is developed, beekeepers should proceed cautiously. At present it is not advisable to depend upon formaldehyde gas for the sterilization of American foulbrood combs except for experimental purposes.

BEEKEEPING ON THE EASTERN SHORE

By A. Howard Johnson

There is scarcely a spot on the surface of the earth where mankind finds sustenance that will not to some extent support bees, although they do much better in some localities than in others.

Only a few years ago it was thought that only localities especially favored would give big honey crops; but since the introduction of better races of bees and modern methods of management we are astonished each year to hear of big yields where we thought bees could hardly exist, let alone produce a surplus of honey.

And so bee-keeping on the Eastern Shore of Maryland, as far as management and manipulation is concerned, is the same as in other parts of Maryland and other States, as we are governed by the weather conditions and the flow of nectar from the different flowers and clovers.

It is not always possible to locate an apiary where one might like, but where conditions permit it is advisable to select a protected spot. An ideal place would be in an orchard, protected from the cold winds of winter, either by a natural or a built windbreak.

A good windbreak is now regarded, for winter protection, as about as important, and some think more important, for outdoor wintering, as packing and double-walled hives. In my yards on the Eastern Shore of Maryland I try to give them good windbreaks as I have never packed all of my colonies, not that I do not think that the packed ones come through the winter in better condition, but largely because of the cost and the time required. In one of the yards there are two rows of hives and the one nearer the board fence has always come through the winter stronger than the row further away. Last winter I packed the row further away from the fence and they came through 100 per cent. And even with the windbreak the other row had a number of weakened colonies.

For hive stands I am using mostly 2x4 inch lumber laid on the ground and placing the bottom board of the hive on them. In one yard I am using concrete blocks 18 in. long, 8x8 in. square, all of the stands are firmly imbedded in the soil in such a way that the front end of the hive will be a bit lower than the back. I do this so that with beating storms any rain might run out immediately.

I have never been troubled with ants. I have found some on top of the inner covers, between them and the telescope tops, but they have never proven troublesome, but we do have some bother with mice during the winter months going into the hives. At one time I used small mesh wire on the fronts and still do in one of the out apiaries. But now whenever I suspect mice I throw a spoonful of "Mouse Seed" (which I purchase at most any store) in through the entrance. On several occasions these seed have been thrown out of the entrances by the bees, but they are usually eaten by the mice and I find them dead in the spring. On December 14th last, I found a mouse dead in the hole of the entrance cleat, it was a warm day and the bees were running back and forth and seemed to pay no attention to it at all. Strange to say the bees do not seem to object to the mice in the hives, but we have lost some good combs by their cutting and eating.

In my home yard, located on the farm tilled by my brother-

in-law, we always keep a few calves, sheep or hogs in the apiary lot and my experience has been that where they have had the run of the lot the bees are much more quiet and easier to handle. This is because they are used to having some moving figures around and do not get as angry as some of the other bees do when you begin working around them. I have opened hives with a calf grazing directly in front of it, without the bees attacking it in any manner. I have a few tops knocked off, but the only hive I have ever had upset was one on a high stand. But there is also a method in having the calves or sheep in the lot. I have no grass cutting to do. They do it for me, even directly in the front of the hives.

Our first nectar is usually brought into the hives from the maples late in March and then the fruit blossoms give us their supply in April.

My bees have access to peach, pear, apple, cherry and plum trees, at the same time the willows, dandelions, strawberries, grapes, red bud or Judas trees can be worked rapidly if the colonies are strong enough. But they all furnish their portions for early broodraising and some surplus. One of my yards is close to a large number of red bud or Judas trees and how the bees do hum around their early blossoms. About this time the crimson clover, tulip-poplar, locust, linden or basswood, holly and laurel are furnishing plenty of nectar and late June and early July bring the clovers. These are our main sources of surplus honey crops. In 1928 the heavy rainfalls during the clover season kept us from receiving our maximum benefits from it. Our bees were kept indoors a greater part of the time and in fact hardly enough nectar came into the hives for the needs of the colonies and some of the weaker ones we had to feed to save. But the sweet clover came to the rescue and they were able to give a small amount of surplus clover honey. We received some surplus from the Burdock and Spanish needles in August and then the bees really worked on Heartsease or smart weed, asters, golden rod and buckwheat. They not only put it into the supers, but packed their brood combs well with it. Golden rod seldom fails to yield freely, even in cold and wet weather, but it seemes to do exceptionally well during a warm, dry fall.

The flowers of buckwheat secrete nectar only in the mornings, towards noon the flow lessens and ceases entirely in the afternoon—but begins again vigorously the next mornings. Thus in the afternoon, not withstanding the great expanse of blossoms and its strong fragrance, only a few bees will be found in the fields. Buckwheat seems to do its best when we have cool nights followed by a clear sky and a bright hot sun with very little wind and then from 9 a. m. to 2 p. m., it secretes nectar very fast. We seldom find bees working on it much earlier or later in the day.

Our pollen supplies are gotten from the early willows, fruit blossoms, dandelions and other early blooms and during the summer field corn supplies great quantities of pollen and in the fall the main supply seems to come from the ragweed.

Up to the present I have produced comb or section honey at all of my yards except one, but with my increased number of colonies I will run more of them for extracted honey.

In producing section honey I use full sheets of foundation in them as I find that I get heavier sections instead of where I use starters only. Instead of using sections on the outside row in the supers I use drawn comb, shallow frames and by so doing I have very few partly filled sections, although sometimes the shallow frames are not completely filled. I gather these and use them for winter supplies in the shallow supers. This is a system advocated by Mr. O. H. Townsend of Michigan and I find that it helps me. It also does away with using "bait" combs in the supers. I find that the bees readily accept these supers where these drawn comb frames are used and that there is very little confusion when the supers are put on. I put on the first super just as soon as I find the new nectar being capped in the brood chamber and I place an extra super as soon as the bees are working well in the first one, placing the extra one between the hive body and the first super. As soon as I find the clover flow slowing up I go through the supers, combining the incomplete combs and placing them on the extra strong colonies for their completion.

I use all of the partly filled combs in my chunk honey

trade, cutting the honey from them, placing it in the tins and filling with extracted honey.

In addition to the chunk honey, we put our honey up as follows: all comb honey is sold in cartons and extracted and chunk honey put up in 2½ and 5 pound tin cans. We also put up extracted honey in 8 and 16 ounce glass jars.

We have never had any trouble thus far in selling all of the honey produced, sometimes it has seemed to move slowly at first. Each fall we make exhibits at one or more stores in each town within the territory we have served. This exhibit consists of an observation hive of bees and honey and then honey put up in the different packages. It has always attracted considerable attention and helps to boost the sales. We never sell direct to the consumer, unless we receive the same price as the merchants are selling at. This keeps us in the good graces of the merchants. The past fall a bee-keeper from an adjoining county came to my town and attempted to sell the stores, without success and then started to peddle the honey he had with him around to the homes at a less price than the stores were charging where our honey was on sale. He of course soon sold his supply, but when he came back he did not have the same luck, as the merchants had brought to the attention of their trade our packages, which we try to make attractive and in using cartons had made the comb honey fly proof as well as dust and dirt proof. This particular beekeeper has not been back since he carried home the last lot he tried to sell.

We consign all of our honey to the stores, or I should say we consign to the stores that sell our honey. And as they need new supplies they pay cash for them. In consigning we find that we can get a larger distribution, as few merchants wish to load up on honey, and then we guarantee our comb honey not to leak. If any package does we replace it.

There are very few bee-keepers in my section of the Eastern Shore using movable frames and none that I know of that are producing honey with the idea of making it a business except our own apiaries.

We are making them pay their own way and hope in the

future to have them do even better. The average production the past year was about 50 pounds to the colony, spring count although we had quite a few colonies to give us much more. In 1927 I had two colonies of Carniolans to give me six supers each of comb honey, receiving 325 sections weighing not less than 12 ounces each.

I have purchased some and am in the market to purchase all of the colonies of bees in my section that are now being kept in old box hives. Those I have bought I have transferred to Standard Hives and with one exception they have made me good colonies after introducing pure bred queens. The exception killed several queens and as I could not find a queen, but I believe there was a black queen with them, I combined it with another colony and had no further trouble with it.

I visited an old bee-keeper several years ago, who used to keep his jugs of liquor in the top of one of the old box hives. He said that he had not had any trouble finding it all there since he had begun to store it in the beehive as all of the folks around the place were afraid of bees.

This same man lived at that time on a river farm on the Chester river across from the Kent County shore. One Sunday early in the month of May, two young men rowed across from Kent and told this man that they had lost two very valuable bees which they had purchased from the South and that they thought that they had come across the river to his place as they had seen them fly in his direction and asked permission to look for them, as they would know them as soon as they saw them. They were given permission to look in the hives for them and shortly they called my friend and showed him a bee which they claimed was one of them and asked permission to capture it. My friend said, "Sure, I see it is not mine as its entirely different from any I have." They took it and after finding another like it in another hive calmly rowed back to Kent County with his two Queen bees. My friend came to see me a few days later and said that his bees were very wicked and related the story to me. Of course they soon raised themselves another queen and began again to work.

While working in one of my yards the past summer a visitor came in and said, "I have always wanted to see the inside of a bee hive, may I take a look." And like all bee-keepers I was only too glad to stop work and talk bees. I then took out the movable frames, showing him how the brood was raised, the difference between the drones and worker bees and when I found the Queen he said "Now where is the throne where the Queen and King bees sit."

We have our share of trouble during the swarming season, but with clipped Queens and plenty of room we are keeping the swarming down to a minimum. I had the unusual experience last summer of finding seven queens in a swarm when I hived it. I had placed a queen excluder in front of the hive after placing a new queen, which I wanted to use in the hive entrance. The bees ran into the hive very readily, but imagine my surprise when I began to see the seven queens.

We are using pure-bred Italians in most of the colonies but we have a few colonies of Gray Caucasians and two of Carniolans.

The coming season will be the first time we have had the Caucasians and we are watching them with a great deal of interest. The Carniolans are wonderful in the spring as they build up rapidly and are the first to bring in the surplus honey. But at the same time they are much harder to handle than the Italians. They will surely sting and sting hard.

Come down to see us on the Eastern Shore, we are located in the "Heart of Delmarva" near Centreville, Queen Anne's County.

We are trying to raise better bees and at the same time we are attempting to raise bees better. They deserve it. They are wonderful labor. What other labor have you on your farm or in your factories that work for nothing and board themselves.

REPORT
OF
ELEVENTH ANNUAL MEETING
OF THE
Maryland Vegetable Growers' Association

FIRST SESSION
Wednesday, January 9, 1929

The eleventh annual meeting of the Maryland Vegetable Growers' Association was convened at the Royal Arcanum, Baltimore, Maryland, Wednesday morning, January 9, 1929, at ten o'clock, with the president, Mr. G. R. Cobb, presiding.

After calling the meeting to order, President Cobb called for the report of the Secretary-Treasurer.

REPORT OF THE SECRETARY-TREASURER

W. R. BALLARD, College Park, Maryland.

The vegetable growing industry in Maryland is passing through a critical period of adjustment to rapidly changing conditions. New areas of direct competition have developed, while indirectly, vast importations of food stuffs in a bewildering variety entice the consumers appetite. Maryland, once the leader in canned food products, is feeling not only the pressure from other competing canning areas, but also from the influx of fresh vegetables which fill the retail markets at all seasons of the year and come from Old Mexico, the islands of the sea and from the Southland. New pests such as the Mexican bean beetle complicate production problems. The development of the Roadside Market and the transportation of vegetable products to the markets by truck are phases in the process of readjustment. In no other

period of recent times has there been greater need for the grower to be alive to the situation and to be alert to adopt new methods and practices which seem justified by these changed conditions.

This Association has perhaps failed to function as its founders had anticipated, as a leader in the movement for better things. Just why this should be so is a question often propounded, but a satisfactory answer has not been forthcoming.

The Secretary-Treasurer has handled the simple duties devolving upon him during the past year, has issued the monthly news-letter and made some little attempt to build up the membership. It would seem, however, that the Association must tackle some definite project which will enlist the active interest of more of the Vegetable Growers of the State if it is to fulfill a worth-while mission.

The Treasurer's accounts are ready to be audited. The close of the year 1928 shows a balance of $23.00 on hand. The details of receipts and disbursements will be shown in the account to be placed before the auditors.

RELATION OF GREEN MANURE TO YIELD OF CERTAIN VEGETABLE CROPS AS REPORTED BY DIFFERENT EXPERIMENT STATIONS

BY FRED W. GEISE, University of Maryland,

College Park, Maryland.

Mr. Chairman and Gentlemen: The practice of green manuring in Agriculture, dates back to more than 2000 years B. C. Its value was understood by the Chinese, Greeks, and Romans. This practice was introduced into Europe, and from there into this country. It is interesting to note that in this connection, the practice of green manuring was carried from England to the American colonies in the early days. Near the latter part of the eighteenth century, leguminous green manure crops were grown in Maryland and Virginia. It seems that the cow pea and the native "Eastern-Shore bean," now known as Partridge pea, was turned under.

Later, as the country became more thickly settled and the dairy industry developed, the practice of green manuring became less general, because of the readily available stable manure. In addition, large quantities of stable manure was produced in the cities on account of the horse population that was necessary.

The situation to-day is vastly different, and I need not go into detail for you all know how difficult it is to buy stable manure, and also, that there is not enough to meet your needs.

The question at the present time is one of adjusting your cropping system so as to include green manure in your scheme of production and at the same time produce the maximum in cash crops.

The purpose of this presentation is to present some of the experimental evidence and results that may throw some light on the relation of green manure to the yield of certain crops. The speaker from New Jersey, I understand, will discuss with you the results and practices of green manuring in his State, and I have not included New Jersey results in the mimeographed pamphlets giving experimental results showing the relation of green manure to yield of certain vegetable crops as reported by different Experiment Stations.

Gentlemen, at this point, I want to say that I have drawn very heavily for this material from a new book that just recently came off the press, entitled "Green Manuring" by A. J. Pieters, published by John Wiley and Sons, New York City. This book deals with the principles and practices of green manuring and is just the kind of book that everyone who is interested in the use of green manure for soil improvement should read.

You will note that the results presented here are confined to the vegetable crops; the experimental work reported on green manuring in relation to truck crops is meager as compared with that reported for the general farm crops.

As far as practicable, the results are arranged by crops. Potatoes is first.

The Central Experimental Farms (Canada) report that

the use of clover as a companion crop has increased the yield of potatoes. "In experiments where grain was grown with and without clover, the yields of potatoes following the grain were increased by an average of 39 bushels per acre by reason of turning under the clover." In this work, the residual effect was very marked on every crop used.

Michigan—The farmers have adopted the practice of turning under a full year's growth of alfalfa as a preparation for potatoes. Increased yields as high as 60 bushels per acre have been reported.

Wisconsin—One year's results, 1905-1906 in which red clover was used as a green manure with a resultant increase of 51 bushels of potatoes per acre.

The Virginia results as reported by T. C. Johnson of the Virginia Truck Experiment Station, over a three year period, are of interest. In all cases the green manure gave an increase of the non-green manured plots. This work was done during 1916-1920 with Irish potatoes—one of the crops in a certain system of crop rotation.

Another report by T. C. Johnson is of interest in this connection. In the potato growing section of the Norfolk region, early potatoes are often interplanted with corn. After corn harvest and between July 15 and August 15, rye is seeded and turned under in January or February for early potatoes. At the Station where these results were obtained, sorghum was substituted for corn and turned under in the fall and ground left rough until spring. Like amount of commercial fertilzer was used on all plots and the yields of potatoes, recorded as bushels per acre.

	Prime	Culls
Check plats (average of 4)	61.1	8.0
After cowpeas	132.0	10.5
After sorghum	151.0	12.0
After soybeans	142.0	62.0
After grass (weeds)	133.0	9.0

Sorghum sown thickly at the rate of 2 bushels per acre, produces a large mass of organic matter for plowing under and appears to offer promise as a quick growing crop.

Mr. T. H. White reported some interesting results in Maryland Agricultural Experiment Station Bulletin No. 38. The following table gives yield per acre for the respective plots for the two years during which the test has been made.

Yield of Potatoes from Crimson Clover and No Clover Potatoes
Bushels per Acre

Year	Crimson Clover			No Clover		
	Marketable	Culls	Total	Marketable	Culls	Total
1894	56.3	16.0	72.3	48.6	4.2	52.8
1895	94.3	7.9	102.2	57.5	10.3	67.8
Average	75.3	12.0	87.3	53.1	7.2	60.3

Crimson clover plowed down gave an increase yield of 34.4 bushels per acre, a gain of 50% for 1895. An average gain of 45% for the two years.

OTHER VEGETABLE CROPS

Hartwell and Crandall of the Rhode Island Experiment Station report on six years results, on the substitution of fertilizers, green manure and peat for manure. They give the following of the experiments and of the soil:

This field experiment comprises the following three-year rotation of two cash crops each year (W); and the same rotation modified to include the crops which are plowed under for green manure (X, Y, Z). (Crops plowed under are underlined.)

Rotation	First Year (1)	Second Year (2)	Third Year (3)
W	Cabbage-Beets	Tomatoes-Spinach	Lettuce-Celery
X	Cabbage-Vetch & Rye	Tomatoes-Rape	Oats-Celery
Y	Cabbage-Rye	Tomatoes-Swt. Clvr.	-Celery
Z	Cabbage-Wheat	Tomatoes-Red Clover	-Celery

An annual spring application of 32 tons of stable manure alone is compared with different combinations of fertilizer chemicals used in connection with green manure, peat, and smaller amounts of stable manure.

Variable results were obtained and it is pointed out that in the main the use of green manure seems feasible but in these experiments, it was difficult to get a satisfactory leguminous green manure crop and that further work would be done.

In 1908, the Virginia Truck Experiment Station, inaugurated a series of experiments to determine among other things, the feasability of substituting certain green manure crops in the rotation followed in Eastern Virginia, in lieu of large quantities of stable manure for the maintenance of productivity and organic matter in soils used for truck crop production. When discussing these results, Director Johnson, stated in part, "It will be seen from these results that it is advantageous to use both commercial fertilizers and organic matter in truck crop production and further that where intensive cropping is not followed, the organic matter may be advantageously obtained from the use of legumes and cover crops."

The following table from Maryland Agricultural Experiment Station Bulletin No. 199 is very interesting and suggestive. The table shows the yield in tons per acre of tomatoes on Crimson Clover, early and late plowing for the seasons, 1913, 1914, 1916.

Plot	1913 Yield per acre	1914 Yield per acre	1916 Yield per acre	Average Yield per acre
	(tons)	(tons)	(tons)	(tons)
Early 1	1.9	9.4	8.0	6.4
Late 2	2.0	8.0	.....	[illegible]
Late 3	1.4	8.6	8.3	6.1

The early plowed plot of Crimson Clover did the best.

The following table shows the yield in tons per acre of tomatoes on Crimson Clover fed to cattle and plowed down for the seasons 1913, 1914.

Plot	1913 Yield per acre	1914 Yield per acre	Average Yield per acre
	(tons)	(tons)	(tons)
Fed to Cattle 1	9.8	4.2	7.0
Plowed down 2	8.9	4.1	6.5

For both seasons tried, the largest yield of tomatoes was on the plot from which the clover was fed to cattle and the resultant manure returned to the plot.

CONCLUSION

The experimental results are presented for what they may mean to truck crop growers as interpreted for their conditions. The results as a whole are in favor of the use of green manure, particularly when they can be grown without the loss of a money crop.

It is also hoped that the presentation of these results will serve as a basis for a round table discussion.

HOW GREEN MANURE CROPS ARE USED IN NEW JERSEY

By H. R. Cox,

New Jersey Experiment Station,
New Brunswick, N. J.

The two most important characteristics of a fertile soil are: an abundance of organic matter or humus, and an abundance of plant food. The latter may be easily supplied from the fertilizer bag, but the former is a much more troublesome problem.

Our dairy farms, on which liberal supplies of manure are produced and on which sods and crop residues are turned under, should have little difficulty in keeping up the organic matter supply of the soil; with the judicious use of fertilizer and lime it should be a comparatively easy matter to maintain crop yields. With other types of farms, however, particularly vegetable and fruit farms, the problem of keeping

the soil adequately supplied with organic matter is one which requires considerably more ingenuity and expense.

In years past vegetable and fruit growers located close to towns and cities have depended to a large extent upon city produced stable manure as a source of organic matter. That the supply of this material is fast disappearing is a matter of common knowledge, and is indicated by the figures on horse population in New York City for the census years 1910-1925 as shown in Table 1. The tendency noted is, of course, due to the gasoline engine, and the gas engine leaves no residue.

In spite of decreased use of city stable manure in the vegetable and fruit sections, crop yields apparently have not

TABLE I

Horse Population of New York City

Year	Number of Horses
1910	129,000
1920	57,000
1925	39,000

been decreasing. Generally speaking, yields have been slightly increasing in recent years. As far as New Jersey is concerned various explanations for this tendency have been given. One is that the farmers have been adopting better production methods in the control of insects and diseases, the use of fertilizer, the use of better varieties, and others. Another explanation given is the increased use of green manure crops. There is no doubt that the use of these crops is increasing and it is a fair assumption that it is one of the causes of increased crop yields.

That it is possible to grow large crops of vegetables and fruits by the efficient use of green manure crops supplemented by commercial fertilizer has been amply proven. I can name a dozen men in New Jersey who have practically discontinued the use of manure and who are maintaining high yields.

Some proof of the value of winter cover crops as compared with no cover crops and with manure is shown in Table 2. This table records the results of an experiment in New Jersey carried on over a period of four years. A piece of light soil of a loamy sand character was devoted to vegetable growing during the four year period. In three of the years sweet corn was grown and in the other year tomatoes. Every year after harvest cover crops were sown on the two plats devoted to cover crops. The third plat received every year an application of from 20 to 30 tons of manure to the acre, but no cover crops. A fourth plat received neither

TABLE II

Yields of Sweet Corn in the 4-Year Test at Jamesburg, N. J.

Treatment	1923	1925
Rye alone	287 lbs.	292 lbs.
Rye and legume mixture	394	299
Check. No cover crop	176	175
Manure. No cover crop	388	245

manure nor cover crops. All plats were fertilized equally with about 700 lbs. per acre of 3-8-3 goods every year, together with a side dressing of 100 lbs. nitrate of soda. The yields of two of the four years from two interior rows of each of the plots are shown in the table.

In order that this discussion may be clear and helpful it is well to make certain definitions. There are four types of green manuring, which are as follows:

Main Crop
Companion Crop
Catch Crop
Winter Cover Crop

Each of these types has a place in the middle Atlantic States. Let us consider them separately.

Main Crop. A green manure crop which occupies the land during the growing season to the exclusion of any other crop

and not used for any other purpose may be called a main crop green manure. An example would be soybeans sown in May or June. Such a crop would be plowed or disked down in late summer after which a winter cover crop would usually be sown. Green manuring of this type, devoting an entire season to the growth of a crop, is rather expensive, so much so indeed that the plan is not often used. Where the land is to be devoted later to the production of high-value crops, it is probable that certain men could well afford to devote a field for a year to soil improvement by this process. Other crops which have a place in green manuring during the summer season are Sudan grass, Sorghum, Corn, Buckwheat and Sunflowers. A number of farmers in New Jersey have used various of these crops in the manner which has been described.

Companion Crop. In many sections of the United States it is common practice to sow clover and grass in small grain. Ordinarily the grass and clover mixture is cut for hay; it is also utilized sometimes as a green manure crop. Sweet clover alone or mixed with grass and other clovers is the crop most largely utilized in this way for green manure. After harvest it makes a fast growth. By the following spring a large amount of green manure, rich in nitrogen, may be turned under. Although this plant is used rather widely in the middle west it has not made much headway in the Atlantic States. It is well adapted to this region, however, and might well be used more widely in this way. If the land has not been limed recently a mixture of alsike clover and timothy might be better than sweet clover.

Catch Crop. Crops that have a brief period of growth and are put in after a main crop has been harvested or between two main crops, are called catch crops. I anticipate an increase in this type of green manuring in the intensive vegetable growing sections. Certain market gardeners find it impossible to use a winter covering crop, or at least they think so, on account of utilizing the land from early spring until late fall. Many of these men, however, find that there is a period between the early and late market crops, usually in July, lasting from 3 to 6 weeks in which a green manure

crop may be grown. It has been found that such fast growing crops as Sudan grass and sunflowers offer large possibilities. One of the New Jersey market gardeners last year had sunflowers 18 inches high and Sudan grass 12 inches high only 3 weeks after sowing the seed. This method is especially adapted to land having overhead irrigation.

Another type of catch crop is one which is seeded in late winter or early spring to precede a late planned market crop. Among the various crops tested so far on this basis in New Jersey, oats seems to be about the most efficient.

Winter Cover Crops. Of the four types of green manure crops, these are by far the most important. There are many different kinds of winter cover crops and there are many different ways of using them. Some live over the winter and start growth in the spring. Others die on the approach of cold weather. Some are sown in the summer, others in the fall. Some are sown at the last cultivation of the main crop, others after the main crop is removed. Some are reliable, others rather unreliable.

Winter cover crops have broader functions to perform than the other types of green manure crops. Besides providing organic matter and conserving plant food they prevent the soil from blowing and washing during the winter.

With winter cover crops we have the important problem before us as to whether they shall be legumes or non-legumes. This problem applies also to the other three types of green manure crops, but will be discussed here on account of the relative importance to winter cover crops among the four general classes. Legumes are plants which belong to the clover family and include besides all the clovers, alfalfa, vetch, soybeans, field peas and others. The great advantage of growing legumes is that they add considerable amounts of nitrogen to the land gathered from the air, through the activity of the nodule forming bacteria living on their roots.

The legumes, however, have certain disadvantages as compared with the non-legumes. They are more difficult to grow, they are fussy about soil acidity, the cost of the seed is a little higher as a rule, and they usually require a longer period of growth to produce an equal amount of organic

matter. These are serious weaknesses and have to be reckoned with. In spite of most of the propaganda on green manure crops favoring the legumes rather than the non-legumes our New Jersey farmers seem to prefer the latter. In a survey made last year in Gloucester County on 90 vegetable growing farms, the following acreages of the various winter cover crops was found:

Rye	1611
Wheat	76
Hairy Vetch	97
Crimson Clover	187
Others	511

Included in "others" were soybeans, sweet clover, and such mixtures as rye and vetch, rye and crimson and vetch and crimson. If a similar survey were made in the Central Jersey potato district a still greater preponderance of rye would be found.

If this is the situation today it is more than probable that the non-legumes will be even more important relatively in the future, at least on the intensive vegetable farms. I base this guess in part on the probability of cheaper commercial nitrogen in the future, which would place less value on the nitrogen producing cover crops; and in part on the probability of more intensiveness in the vegetable industry, which would permit a smaller proportion of the growing season being alloted to the growing of green manure crops.

And just how much more valuable are the legumes than the non-legumes even under circumstances favorable to the legumes? The figures in Table 2 will throw some light on this point. Although the cover crop mixture containing legumes produced a larger yield of sweet corn than did the rye cover crop at the first harvest, at the second harvest the rye cover crop had practically caught up with the other. The principal reason for this was that during part of the time the legume cover crops were partial failures. This apparent superiority of non-legumes under certain conditions would probably not hold in many types of farming other than intensive vegetable and fruit growing.

As I have observed the winter cover crop situation in New

Jersey the following summary might be made for each of the more important winter cover crops:

Hairy Vetch. At its best when seeded in September and allowed to grow a while the following spring. Cost of the seed comparatively high. A better stand may be had by drilling than by scratching in. Needs inoculation; on land that has not raised vetch or peas successfully in recent years. Prefers a sweet soil. Not as dependable as rye but if a good stand and growth is secured a most valuable cover crop adding both organic matter and large amounts of nitrogen to the soil.

The Clovers. This includes crimson, sweet, alsike, and red. Cost of the seed fairly high. At their best if sown in August. Not so necessary to drill as with vetch. Not necessary to inoculate except in the case of sweet clover. Much prefer a sweet soil. Not as dependable as rye. Fully as valuable as vetch with an equally good stand and growth.

Rye. A general purpose, a fool-proof cover crop. Can be sown early or late. Cost of seed comparatively low. Not as fussy in any respect as vetch or the clovers. A fast grower. A more efficient producer of organic matter than vetch or the clovers. Its great disadvantages are that it is not a nitrogen gatherer and that it must be turned under before it gets too high or it may do more harm than good to the crop which follows.

Wheat. On land well adapted to wheat and with seasonable sowing probably of more value than rye. Cost of seed usually a little higher than rye. More latitude permitted in spring than with rye as to time of plowing under.

So far our discussion of winter cover crops has been confined to those crops which live over the winter. There are certain crops which do not live over the winter but which may be classed as winter cover crops. When sown early enough oats may be put in after an early main crop and be depended upon to make a heavy growth before it is killed by freezing. The dead tops cover the soil surface during the winter and furnish considerable organic matter when turned down in the spring. They may be depended upon to make more growth between midsummer and fall than would rye

sown at the same time. I have seen oats and barley sown after potatoes in early August make 2½ feet of growth before cold weather. Several years ago Professor G. S. Watts of Pennsylvania ran a test to compare oats with a number of other crops sown under the conditions above described. After the market crop was removed sowings were made on August 10 to millet, Sudan grass, sunflowers, corn, buckwheat, barley and oats. Oats and barley made the best showing of all. Sunflowers also did very well. Both the Sudan grass and sunflowers would probably have given a better account of themselves with earlier sowing.

The question is often raised whether a winter cover crop such as rye is sufficient to maintain the organic matter content of the soil. This is an important question. Under certain circumstances it seems to be sufficient, under others it certainly is not. The potato grower who can get in a rye cover in August or September, for instance, will have a fairly thick mat of green manure to turn under even with very early spring plowing. There is no evidence that potato yields are decreasing in Central Jersey under this rather general system of rye cover cropping. On the other hand the truck farmer who puts in his rye in October or November and plows it down at the first possible date in the spring is usually not maintaining organic matter. Some of these men say that their yields of market crops are not as good as they used to be. What is the solution of the organic matter problem under these conditions? The obvious thing is to allow longer periods for the growth of the green manure crops. This may be done by sowing the winter cover crop earlier, or letting it grow later; or in certain other cases, devoting an entire season to green manuring as previously discussed. The impression prevails that yields are better after the land has "rested" for a year in sod, by which is meant a grass or clover sod, than they are after a winter cover crop. Even if the sod is not cut for hay it may be a wise plan for certain truckers to sow down some of their land for a year to grass and clover, especially those men who have more land than they can farm efficiently. As a matter of fact grass and clover sown in August and turned under late the following spring is a fairly good winter cover crop.

In the discussion that followed Mr. Cox's lecture, Mr. T. H. White, of the Maryland Experiment Station, offered the following remarks:

My first observations on green manuring were made many years ago. Some rye was sown on a piece of land. A portion of this was cut and fed. The remainder grew tall and headed out before being turned under. Sugar corn was planted and yielded much better on the portion where the rye was cut off.

Later, crimson clover and commercial fertilizer were used in an experimental way on cantaloupe and sweet potatoes, using barn-yard manure as a comparison. The results were poor but decidedly in favor of the barn-yard manure.

During the cropping season of 1913, some land became available that had been an orchard for twenty years, and for twelve years previous to 1913 had been regularly treated with green manures arranged in plots. The orchard trees were pulled out and this land became available for vegetables.

The green manuring treatments were: rye, crimson clover, cowpeas and rye, cowpeas, and orchard grass sod. The plot upon which the cow peas and rye were grown was not cultivated except to plow under the peas and sow the rye or vice versa. The other plots were cultivated, except when the crop occupied it, which in the case of the cow peas, was from June until April, when the dead vines were turned under; and for the crimson clover and rye were from July 15, and September 15 respectively, until May 15, when the green crop was plowed under. The sod plot was not cultivated but the grass was mown and left on the land. Sweet and Irish potatoes were planted across the plots. A record was kept of the yields. The best yields in both cases were on the plots which had received the cowpeas and rye. The rye gave a slightly better yield than the orchard grass sod, in the case of the Irish potatoes, but the sweet potatoes were better on the sod plot.

The same and the following seasons some experiments were made which sought to determine the best time to plow down crimson clover and also whether the manure from

animals fed on crimson clover would be as effective as turning the green material under. In these experiments, the crimson clover (1) was turned under green just before blossoming; (2) cut when the plants matured and left lying on the land; (3) plowed down when mature; (4) fed to cattle and manure returned to the land. Tomatoes were planted in these tests. This resulted in the conclusions that "on the average, the early plowing down of the clover did the best," and in the case of feeding the clover as against turning it under, the larger yield was from the plot where the clover had been fed to the cattle and the manure returned to the soil.

Later experiments were conducted to consider the "value of rye, legumes and resting, on land that had been fertilized with chemicals and cropped for several years." In this case the rested plot was sown to clover and hay was taken from it; the legume plots hay Soybeans, and cowpeas in the summer, and rye in winter. These were sown and plowed under for two years. As a check for these plots, another plot was planted to tomatoes the first year, and sweet potatoes the second. The legumes and rye were sown and as stated before plowed under for the two years. Clover hay was harvested from the rested plot and a crop of tomatoes and sweet potatoes were taken from the check plot each of the two years. The third year all the plots were plowed in the spring and after applying some commercial fertilizers, potatoes, cabbage and spinach were planted. The following year sugar corn and the next year Boston Marrow Squash were grown. The plot which had "rested" and produced the clover hay gave the poorest results each season. Compared with the check, which had grown a crop of tomatoes and sweet potatoes, while the cowpeas and rye had been growing on the other two plots, the differences were very slight. In summing up the total value of all crops grown, including the hay and the tomatoes and sweet potatoes. The results were, for the rested plot $24.40, for the Soybeans and rye $18.62, for the cowpeas and rye $20.06 and for the check plot $29.61. The plots were one-sixteenth acre in size.

In another experiment, a ten years test, rye was used as

a crop to turn under green, and for comparison. The check plot was left bare. Rye was sown late and was allowed to show heads before being turned under. Tomatoes, sugar corn, cabbage, and potatoes, were grown on these plots. For one year out of four, the potato crop was best on tne rye turned under. The one year that tomatoes were planted, they were best on rye. One year out of two, cabbage was best on rye turned under. The squash and sugar corn were better where no rye was turned under. In the case, the increase yield from the rye would not more than pay for the seed and the extra work of drilling it in. Chickweed grows on this land and usually is heavy enough to make a satisfactory cover.

Another experiment which was carried on for ten years to determine the effect of a good winter cover for the soil, gave better results than when the rye was used to supply a quantity of organic matter. In this case the rye was always sown early in September so that a good mat covered the ground all winter. This was plowed under usually the latter part of March and for six of the ten years early potatoes were planted. For four of these six reasons the yield was better on the rye-covered plot, and one of the seasons when corn the previous summer had preceded the potatoes, there was a one hundred per cent increase for the rye. It was noticeable this season that the check plot, or "bare plot" as it was designated, was very bare of weeds or any vegetation throughout the winter. A summary of the values of the crops under this treatment showed an average value for the rye cover crop of $9.41 a year.

To note the performance of a crop following legumes, wheat, turnip, or spinach crops, a piece of land, that had received fertilizer only for several years, with no green manures turned down, was laid off in small blocks, after digging early potatoes. The land was prepared and on August 15, the plots were sown to the different crops. The crops were: turnips, sweet clover, sapling clover, and hairy vetch. Later on September 3, the spinach was sown, and the wheat on October 5. The crop of turnips and spinach were harvested when ready. The legumes on the other plots made

a good growth and all were plowed on May 15. For comparison, another plot which had been treated the same as regards crops, but had no manure or green manure except weeds through the winter was fertilized the same way and all the plots were planted to sugar corn. The ears were all gathered and weighed. Comparing the recorded weights of the sugar corn, we find that where spinach had been grown there was a decrease of 360 pounds per acre; where wheat had been turned under, an increase of 60 pounds was secured. Vetch turned under, gave an increase of 840 pounds; sapling clover gave an increase of 780 pounds; sweet clover resulted in an increase of 1440 pounds; turnips gave an increase of 60 pounds per acre.

It is easily seen that the legumes as a green manure crop were much greater than the wheat, and the taking off of a crop of turnips or spinach is not as good for succeeding crops as sowing vetch or sweet clover. However, the spinach removed sold for $90.00 per acre and the turnips sold for $60.00. The best increase on the sugar corn made $21.60 over the spinach plot.

So, considering returns from the land, it was more profitable to grow spinach than sweet clover to turn under. To sum up briefly, green manures cannot be depended upon to increase yields like an application of barnyard manure or chemical fertilizers. The best use of rye or wheat is to keep soil covered in winter and should be plowed under early. Vetch and the clovers sown early so that a good cover is formed for the winter, is quite beneficial but may not result in quite as good returns from the land as if turnips or spinach is sown. It does not pay to miss a crop on good soil for the sake of growing a crop of cowpeas or soybeans to turn under.

Because green plants or vines are of no value as plant food until they decay, it would be better instead of plowing them under to decay in the soil, to feed them to animals and the manure be returned to the soil. It is supposed protection by green plants in winter preserves the beneficial soil organisms as well as plant food that might be blown or

washed away. Land that is covered with a crop during winter will produce better when an early crop of Irish potatoes or cabbage is planted. Where land is used to produce crops like tomatoes or sweet potatoes, the vines add considerable organic matter to the soil.

Some observations indicate that the shade from close growing vine crops is beneficial to soil, so the use of vine crops which shade the soil, like tomatoes, sweet potatoes, or squash, will help to maintain soil fertility.

In regard to the question of whether commercial fertilizers alone will maintain soil fertility, experiments and observations of many years show that they will. The Maryland Agricultural Experiment Station bulletin No. 199, published in 1916, reports results of experiments where plots were fertilized annually for four years with commercial fertilizers and then for the next four years no fertilizers were applied but crops were grown. All through the experiments the fertilized plots produced more than the unfertilized plots. And when, after eight years of cropping, some clover was sown and turned under and the plots were fertilized with 300 pounds of 16% superphosphate, there was 100% increase in the yield of tomatoes on the plots receiving the four original applications of fertilizers.

Bulletin No. 251 shows that sweet potatoes on the same plots for eighteen years gave increased yields annually from commercial fertilizers, and then when the plots were planted to Irish potatoes without any further fertilizing, they produced fifty more bushels per acre than did the plot receiving no fertilizer. The following two years, from the last application of fertilizer, the fertilized plot produced twelve hundred pounds more beans per acre.

Results, about to be published, of some later experiments, which have been going for twelve years show that there is no significant difference between four tons of manure and 500 pounds of fertilizer. Eight tons of manure and a thousand pounds of fertilizer or twelve tons of manure and 1,000 or 1,500 pounds of fertilizer. The commercial fertilizers have been more profitable than the manure because the plant food in the commercial fertilizers is cheaper than it is in the

manure. Under most conditions, one thousand pounds of good high grade fertilizer used annually on one acre of land will maintain and possibly increase the soil fertility. Fifteen hundred pounds of fertilizers per acre will increase yields above the thousand pound application, but at a greater cost. The extra five hundred pounds will not make as great an increase as the first or second five hundred pounds.

SECOND SESSION

January 10, 1929

The President, Mr. Cobb: We have some important topics to discuss this morning, and I am going to call on Dr. E. N. Cory to discuss the very timely subject, "The Mexican Bean Beetle and What to Do With It."

MEXICAN BEAN BEETLE CONTROL

By ERNEST N. CORY, State Entomologist.

During the summer of 1928 extensive damage was done by the Mexican bean beetle to all classes of beans and in at least one instance to soybeans. The infestation was general throughout the State and a number of methods were used to combat the pest. Out of these experiments and the experiences of the U. S. Department of Agriculture for a period of eight years the following control program has been built up. However, it is essential for the grower to know the life and seasonal history and therefore this is given as briefly as possible as a back-ground for the control program.

Life and Seasonal History

The adult is nearly circular in outline, being ¼ of an inch long and slightly less in width. The color when it first emerges from the pupal case is light yellow. Later on, black spots to the number of eight develop on each wing cover, and when the beetle is quite old the color changes from light yellow to copper color or a dull orange.

The beetles lay eggs in patches on the under side of the

leaf. About 40 eggs are deposited in each patch. The eggs are orange-yellow. These hatch into larvae about 1/20 of an inch long, covered with branching spines that are tipped with black. The larvae shed their skin three times before they reach maturity, at which time they are about 1/3 of an inch long and 1/6 of an inch wide. Shortly after the larvae hatches and up to the time it pupates, it feeds on the under side of the leaf and is responsible for the major injury to the plants. The pupal or inactive stage attaches itself to the leaf stems, weeds or some nearby debris. This stage is slightly shorter and thicker than the last larval stage. From this pupa emerges the light yellow adult.

The insects hibernate as adults in trash adjacent to the fields and in woodlands nearby. The beetles emerge from their winter quarters just about the time that the earliest garden beans are coming up. However, some remain longer and are straggling into the fields over a period of several weeks. The females begin to deposit eggs at once and the injury to the crop is done both by the adults and this first generation of larvae. As the weather grows warmer the incubation period requires only five or six days. The average time under favorable weather conditions from egg to adult is about 33 days.

Within two weeks after emergence the females lay eggs for the beginning of a second generation. Two complete generations occur and a partial third generation has been recorded. Most of the beetles of the second generation go into hibernation.

Control

Spraying or dusting should begin as soon as adult beetles appear in considerable numbers in the bean fields. Specialists of the Entomology Department will be available to assist you throughout the season.

Spraying, based on Federal experience of eight years, has been more efficient in actual percentage of control of beetles and larvae than dusting. Therefore, unless already equipped with dusting machinery, the canner should spray large acreages for most effective control. On isolated contract

fields of two acres or less, where the canner does not furnish spraying equipment, dusting is more practicable, since no thoroughly efficient and economical hand sprayers are available. If you spray, adjust the nozzles so that two are directed upward and backward from pipes that reach nearly to the ground and one downward directly over the center of the row. For spraying use 1 lb. of magnesium arsenate in 50 gallons of water. Apply 90 to 100 gallons of spray per acre. Use good pressure, thorough agitation, and small hole disks. Discard and renew disks after fifteen hours use.

Dusting has given good results in our experience and has several advantages over spraying, particularly where a large number of fields, distant from the central packing house must be treated with a given time limit. Dusters in all sizes, each efficient for its type, are available. Use the type suited to the acreage. For dusting use 1 lb. of magnesium arsenate to 3 to 5 lbs. of lime. Apply 10 to 15 lbs. per acre or use a commercially mixed copper-arsenic-lime dust consisting of approximately 20 per cent mono-hydrated copper sulphate, 20 per cent calcium arsenate and 60 per cent of hydrated lime. Use 10 to 15 lbs. per acre. In general, it is advised, that factory mixed dust be purchased unless a self-mixing duster is used. In all cases purchase the best materials available. This applies equally to spraying materials. Adjust the discharge pipes so that they will lie close to the ground and direct the nozzles backward and slightly upward. Cut down the air blasts so that the plants are not whipped about.

The number of applications (dust or spray) will depend upon the abundance and distribution of rains, growth of plants and the spread of migration of beetles into fields over a short or long period; usually applications at 8 to 10 day intervals are necessary.

Applications should be discontinued when the pods of green beans are formed. In case later applications, due to continued migration into the field are necessary, extra care should be exercised in washing cannery beans. Those going directly to the consumer should be sprayed with pyrethrum instead of arsenicals, if applications after the pods are formed are necessary.

Plow down fields after the crop is picked to destroy any stages, particularly pupae that may be on the plant. Use a wide bottom plow, such as has been devised and placed on the market for Corn borer control.

THE INTERRELATIONSHIP OF SUPPLY AND PRICE OF VEGETABLES.

By Wm. P. Walker, University of Maryland,
College Park, Maryland.

The law of supply and demand, or supply and price, with price used as a measure of the demand, is as old as civilization itself. As the supply of a product increases the consumer's demand becomes more completely satisfied and the consumer is less willing to pay as much for additional supply. Carver [1] states that "An article has value only when it is wanted. **** If there are so many other like it that the desire is completely satiated, the object in question will not be wanted at all. But if there are not enough to go round and satisfy everybody, each and every object will be desired and will consequently have a value. *****. Then, the reason that any superabundant article under ordinary circumstances has no value is because it is so abundant that every desire is completely satiated." The limit in price which an individual is willing to pay is determined largely by the importance of the use of the product in his daily life and the price of a suitable substitute to be obtained. The law of supply and price works more readily and surely in the case of perishable products, and most vegetables are perishable.

There are two classes of vegetables from the standpoint of the consumer's demand. One class is termed elastic commodities, and the per capita consumption of those commodities varies with the price. When the price of a commodity becomes too high the consumer turns to another that can be substituted with reasonable satisfaction, but is lower in price. Some of the vegetables in this class are cabbage, spinach, snap beans and asparagus. Many of the

[1] Carver, T. N.—Principles of Political Economy, pp. 272-275, Ginn and Company, New York City, 1919.

elastic vegetables have been produced commercially only in recent years and have not, as yet, reached that production which completely supplies the market demand. Under such conditions the price of a given commodity might remain the same or actually increase in spite of the increase in production. This is true, in some degree, of asparagus. Although the production of asparagus in Maryland, Delaware, New Jersey and Pennsylvania has increased from 327,000 crates in 1918 to 1,216,000 crates in 1927, there has been no noticeable downward price trend. But as time goes on, each commodity will come to the point in production where the per capita consumption will have reached its maximum and further increase in supply will result in a decrease in price. Until that time, the price is reflected to some extent by the price of competing and substitution commodities. It is often true that continued high prices, in spite of increased production, is the cause of over enthusiasm as to the future, with the final results that sooner or later the production will exceed the demand.

TABLE I.

Production and Farm Price of Asparagus, 1928-27.

Year	Production (24 pound crates) [1]	Maryland Farm Price Per Crate
1918	327,000	$2.06
1919	327,000	1.70
1920	376,000	1.33
1921	360,000	1.96
1922	387,000	1.81
1923	514,000	1.61
1924	720,000	2.35
1925	898,000	2.01
1926	1,019,000	1.32
1927 [3]	1,216,000	2.34

[1] In Maryland, Delaware, New Jersey and Pennsylvania.
[2] Corrected by index number of wholesale prices computed by U. S. Bureau of Labor, 1913, equals 100.
[3] Preliminary figures.

The other class of vegetables is the inelastic commodities, the per capita consumption of which remains fairly constant unless abnormal prices prevail. The white potato

is an example of this class; it has no satisfactory substitute and it has long been a regular part in the every day diet of the consumer. Consequently, we find that the yearly supply and price are in inverse relationship.

TABLE II.

Production and Price of White Potatoes in the United States, 1918-26

Year	Production (bushels)	Farm Price Per Bushel [1]
1918	411,860,000	65
1919	322,867,000	109
1920	403,296,000	58
1921	361,659,000	83
1922	453,396,000	50
1923	416,105,000	62
1924	421,585,000	51
1925	323,465,000	115
1926	354,328,000	93

[1] Corrected by index number of wholesale prices computed by United States Bureau of Labor, 1913 equal 100.

The average price per bushel of white potatoes for the five years from 1918 to 1926, during which the production in the United States was over 400,000,000 bushels, was 57 cents and the total farm value $1,201,312,000. During the four years when production was less than 400,000,000 bushels, the farm price [1] was 99 cents per bushel and the total farm value $1,353,611,000. The four small crop years was worth $152,299,000 more to the farmers than the five large crop years.

Warren and Pearson,[2] in discussing the relationship between the size of the United States potato crop and the farm price at Bataira, New York, show that during the period from 1913 to 1927 the seven small crops resulted in a farm price of $1.48 per bushel, compared with $0.63 for the seven large crops.

There are long time and short time relationships between the supply and price of vegetables. There is a year to year

[1] Corrected by index number of wholesale prices given by United States Bureau of Labor, 1913 equals 100.

[2] Warren, G. F. and Pearson, F. A.—Interrelationship of Supply and Price. Cornell Exp. Sta. Bul. 446, pp. 23, March, 1928.

relationship with some commodities, such as white potatoes and onions, a large part of the crop being subject to storage. The price of such commodities may be high for one year and low the next.

There are commodities, the price of which may change considerably from month to month as well as from year to year. Such commodities are more or less seasonable in production, they are subject to canning and can be stored to some degree. The average Maryland farm price of sweet potatoes from 1921 to 1925 was highest in the month of May, at $1.60 per bushel, and lowest in November, at 98 cents. In the fall months there is but small differences of a few cents between the Maryland farm price and the New York jobbing price, but by April there is a difference of $1.37 per bushel, which is presumably the cost of storing, financing, risking and losses over the winter. There is a possibility that the Maryland farmers could market their sweet potatoes more effectively and obtain better prices if they had proper storage facilities. The months of heaviest car lot shipments of sweet potatoes are the months of lowest farm and jobbing price, while the month of lightest shipments are those of highest prices.

TABLE III.

Carlot Shipments, Maryland Farm Prices and Jobbing Prices at New York City of Sweet Potatoes, Average of 1921-25

	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July
Maryland farm price	$1.44	$1.18	$0.98	$1.35	$1.25	$1.33	$1.38	$1.39	$1.60	$1.54	$1.40
New York jobbing price	1.46	1.26	1.52	1.97	2.27	2.34	2.41	2.76	.....	.....	.....
U. S. carloads	3,456	3,976	2,665	2,175	1,580	1,100	1,079	554	206	52	383
Maryland carloads	211	413	319	258	117	86	58	26	2	....	....

[1] Data obtained from Yearbook of Agriculture, 1927, and U. S. Department of Agriculture Statistical Bulletin No. 16, June 1927.

The average farm price of cabbage in Maryland from 1921 to 1925 was the highest in May, at $4.00 per 100 pounds, and lowest in September, at $2.23. This does not mean, however, that it would be profitable to try to produce all of Maryland cabbage in May or even in June and July when the price is much higher than in August and September, because the early cabbage will not produce as large heads, and consequently not as much per acre, as the late cabbage. Furthermore, there is, in case of a low market price in the fall, a possibility of disposing of the cabbage for kraut manufacturing or of putting it in storage, which is possible to a lesser extent in the case of early summer cabbage. The average Maryland farm price per 100 pounds of cabbage from 1910 to 1925 is as follows:

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
$2.52	$2.72	$2.99	$3.32	$4.00	$3.35	$3.08	$2.44	$2.23	$2.28	$2.26	$2.40

The month to month price of tomatoes suggests that Maryland farmers could well afford to produce more of their tomatoes in July and the early part of August. The average farm price of tomatoes in Maryland from 1912 to 1925 was $1.99 per bushel in July, $0.83 in August, $0.66 in September and $0.76 in October. While it is often true that extremely late tomato crops command a premium on the market, it is also true that as the crop is delayed the yield per acre will most likely be reduced.

With perishable commodities, like snap beans, sweet corn and at some seasons of the year, cabbage, it is possible to observe from week to week and day to day wide fluctuation in price due to the amount received on a market. DeVault[1] reports that the price of snap beans on the Baltimore market received by farmers bringing produce to the market was $1.00 per bushel for one week, 40 cents the next week and the following week back to $1.00. He also reports the price of cabbage to be selling at one cent a pound one day and from three to four cents a pound the following day. Such wide fluctuations in the price is a result of alternatively dumping

1. DeVault, S. H.—The Marketing and Distribution of Home Grown Fruits and Vegetables in Baltimore, Unpuplished data of 1922.

and creating a scarcity of the commodity in the market. Finding the price of a commodity high one day, each farmer resolves to bring in nothing but that commodity the next day, and the market becomes flooded. The farmer then turns to another commodity that is high that day and so it goes.

There exists a very definite inverse relationship between the number of carloads of cabbage on the Baltimore market and the jobbing price during the month of May in 1927 and 1928. We cannot expect the situation to be exactly alike both years, consequently we find the trend from the first to the middle of the month in 1927 opposite from that in 1928, the price trend being downward in 1928 and upward in 1927.

TABLE IV.

Relationship Between Carlot Supply and Jobbing Price Per 100 Pounds of Cabbage on the Baltimore Market, May, 1927 and May, 1928.[1]

1927			1928		
Date	Carloads Arrived and on track	Average Jobbing Price	Date	Carloads Arrived and on track	Average Jobbing Price
		$3.75			
May 2	35	4.00	May 1	6	$5.65
3	22	4.10	2	19	5.40
4	12	4.40	3	12	5.10
5	7	4.75	4	25	5.15
7	3	4.25	5	25	4.25
9	3	4.37	7	25	4.65
10	7	5.75	8	22	4.75
11	3	5.50	9	24	4.50
12	3	5.25	10	14	5.25
13	9	5.75	12	24	5.00
14	2		14	39	4.25
			15	24	4.25
			16	22	3.75

The regulation of supply and price so as to make the fluctuation less violent and frequent is a difficult problem. It will probably never be possible to regulate it completely. There are irregularities in some seasons, crowding the production of competing areas into a shorter marketing period

[1] Data obtained from office of Fruits and Vegetables, Bureau of Agricultural Economics, U. S. Department of Agriculture.

and congesting markets. The local producer has no control over the production of competing areas that may increase or decrease the total supply and, in fact, the individual producer does not have complete control over his own production per acre.

There are three ways in which the individual may assist in reducing the fluctuations in the supply and price. The first is by recognizing the fact that increasing the per capita consumption of every commodity has its limits and that by increasing the per capita consumption of one commodity necessarily means decreasing the per capita consumption of another. Due to the constant adding of new vegetables and the increased production per acre of old vegetables it is important that we guard from too great increases in acreage.

Another possibility lies in reducing the risks of production. It is often stated that marketing begins with production, and it is probable true that in the early part of production many of the marketing problems are solved. The first requisite is the production of a variety of commodities which are adapted to production in that area and can be successfully marketed. The best varieties, particularly those preferred by the market, should be grown. It is also a better policy to make a succession of plantings, whenever it is possible, rather than to plant the complete acreage at one time. Such a succession of planting reduces the hazards of weather affecting the yield, reduces the possibility of marketing the whole crop on a low-price market and provides a better distribution of the farm labor.

A third opportunity of reducing the fluctuation in supply and price lies in reducing the risks in marketing. It means the proper regulation of the daily supply to satisfy the daily needs of the consumer. It may call for more rigid grading when the supply is large. The hope of many farmers is to have a product for which the consumer will be anxious to obtain regardless of price. It is true that there have been some such products, and there are days when the price is extremely high, but it does not last long, for the consumer of today is looking for variety and he is not afraid to substitute one commodity for another. Under such conditions the

producers will be better repaid if they make themselves content with orderly production and marketing of that variety of products in the quantity and quality the consumer wants, rather than bringing into the market large quantities of one commodity one day and another commodity the next day.

Agricultural economists are coming to see more and more the value of knowing the quantity and quality a market will consume at satisfactory prices to the producers, and constructing a production program to meet that demand. Such information as to market demands would be valuable and it is also likely that someone on the market who knows the demands could render a valuable service by advising the farmers what to bring in each day.

The day to day problem is to create a steady demand—a habit of buying, and to keep that buying habit working. This calls for organized efforts at both the point of production and the point of consumption. Supplying the market with what it wants in an orderly fashion means the co-operation of producers, and distributors.

NEWER DEVELOPMENTS IN TOOLS AND EQUIPMENT FOR THE VEGETABLE GROWER

By E. R. GROSS, State College of Agriculture and Mechanic Arts, New Brunswick, New Jersey.

There are always developments; upon this is based the progress of which we may well be proud. But on the satisfactory use of these developments opinions vary so widely that one who stands in the position of an observing advisor, who carries ideas from one to another, finds himself in a quandry more often than in a position of assurance. This must be true if we consider, as we must, the variable human factor. After all it is this variable reaction that gives rise to the initiative which makes for development. If we could and would all use a new device just as intended by the manufacturer we would be satisfied, no change would be necessary, and there could be no progress. With such an introduction I may safely proceed since I shall always have an avenue of escape.

I have in mind a number of machines and devices, which, are or may still be classed as recent developments. I may say that some of these, though not so recent, are still struggling for general recognition because they have not satisfactorily met the economic situation. We say "labor-saving devices"; labor saving is economic. The economist studies pure economics. He is not concerned with how the machine works so long as it, in the end, is a money-making device. The grain binder, the gas engine, the truck and even the plow were in existence many years before they came into common use. In fact, we need not go far to find those who for one reason or another, good or bad, logical or illogical, do not yet use these very common machines. I may, therefore, assume that any device which is not in very common use would come within the scope of my discussion.

Power and Labor

We are variously informed that power and labor are the two largest factors in the cost of agricultural production. Some state that they are the factors upon which we should work in our effort to cut costs and thereby increase profits. Machinery is always intended to reduce the cost of power and labor. We usually differentiate between these two by considering power as of animal and mechanical forms and labor as of man's efforts. On this basis most machines increase power but reduce labor. This shift from labor to power should result in a lower total cost of production. The only deviation from such a program must be the case where higher costs produce a better product and therefore a greater market value and more profit. Any machine must therefore reduce the comparative cost by enhancing the intrinsic value.

One can hardly delve into the subject without considering some of the causes of change in equipment. One of the most important of these causes is increasing population and the necessary accompanying adjustments. Within the present century we may find 200 million people in the United States. Such an increase in population will bring on a tremendous readjustment in labor distribution, in the use

of mechanical power and in the distribution of the peak labor load with relation to crop rotations. We find it necessary more and more to give each worker a job the year round and reduce to a minimum his busy season. Land which is still producing feed for power animals must gradually be shifted to producing food for human consumption. Mechanical power and equipment is continually acting to conserve human labor. It seems like a paradox to say that an increasing population is producing a shortage of man power; but there will not be more labor for agriculture, on the contrary history shows us that the proportion will be less. We can have no reason to assume anything else unless we reach the apex of mechanical development and who is ready, in this age, to predict such a catastrophe. We must use higher pressure dusting and spraying outfits, larger planting and cultivating units, machines which will harvest crops now gathered by hand, tying and bunching machines, washing machines, better soil preparing equipment and more mechanical power.

Home-made Devices

In many cases the vegetable grower finds it desirable to construct or adapt his equipment. This gives rise to home-made washers, markers, thinning devices, tying and bunching racks, etc. One New Jersey grower recently described a washer in the form of a slotted cylindrical squirrel cage, in which carrots could be washed by rotating the cage in water. The slots were of such a size as to allow the small carrots to drop through thus effecting grading with the washing operation. Many washers of varying design, construction and management are scattered about the State of New Jersey. Most of those deserving recognition as machines involve rotating cylinders and are used for almost all root crops. While home-made machines may be satisfactory they are seldom as convenient as the manufactured product. They are and should be only considered as the forerunner of something better. Washers are on the market and their use should be encouraged if they can be adapted to satisfactory service.

While we have weeding and thinning machines there seems to be few of these which are generally adapted. One such machine is used to some extent on muck lands in New Jersey. It should be a simple test to adapt this machine to other types of soil.

At present hand methods are chiefly employed for thinning and weeding small crops. Here a simple device has been used by some. It consists of lengthening the handle of the thinning tool so the operator in an erect position slashes out blocks of the row thus vastly increasing the work he can do for the effort expended.

Planters and markers still seem to come in the home-made class in many cases. To mark a field into rows or squares by hand introduces an extra operation. Only a little skill is needed to use the marker provided on most seeders and planters. This is especially true when two and three row outfits are used. In such cases the seeders and cultivators should match as to spacing and the same group of rows cultivated together which were planted together. Some New Jersey growers are following such practices up to 8 row outfits.

Transplanters

One of the burdens of the vegetable grower is setting out plants which were started in the green house, hot beds or bold frames. To see a man bending over with a dibble punching holes and setting plants, and continuing this all day seems inhuman in an age when we have machines which will do the work. I realize fully that there are reasons for hand work which sometimes cannot be easily overcome. Yet I wonder whether economy and reason does not demand that we remove the causes and adopt transplanters which are now built to plant, check row and water in a very satisfactory manner. I am surprised not to find more of these machines in use.

Irrigation

Sprinkling irrigation has long been in use and is now recognized as a real need to provide the extra water needed by a crop in periods of drought, in short insurance against

dry weather. Some 300 to 400 growers in New Jersey would speak of the advantage of having irrigation and a large majority would say they cannot get along without it. Yet this is not the thing I am thinking of as a new development. Turning devices or oscillators are now used for turning the lines thus obviating the need of attention and giving a more uniform distribution of water. One man said, "The worst job of all is to sit up all night turning the lines." Considering the insurance against crops lost through drought, the improvement in quality of crops through abundant water, and the saving of labor and water, I feel that irrigation lines must continue to increase and oscillators find their place.

Fertilizer Machines

Fertilizer machinery is the top notcher when it comes to the need for newer and better. This holds almost without exception for all but broadcast application. A number of machines for side dressing of fertilizer are giving good results according to reports coming to me. With these possibly I should mention the endgate broadcast distributor which seems quite satisfactory with lime and nitrate of soda for use over row crops. Neither of these last named machines are particularly new, yet they are not in common use. There seems to be altogether too much doubt as to good methods of applying fertilizer. We may counteract the very real lack of well-designed machines to meet all needs by careful use of the best now to be found. This will serve as a guide in further improvement.

Harvesting Machines

Harvesting machinery for vegetable crops seems to be almost a negligible quantity. The grower must be on the lookout and assert his needs in order to arouse interest. He may even turn inventor himself. An interesting report recently came to me of the use of a potato digger in harvesting celery and root crops. The power requirement is rather large but the results are worth the cost.

Tying Machines

Tying and bunching machines are being tried. Some complaints are, "Not dependable; Require too much help; 3 or 4 to operate one tying machine; Does not bind tight enough, etc. Certain resistance must be overcome. Possibly the trade must be educated to bunches tied with a machine. If it can be done cheaper, why not? Certainly the operation must be better organized than to take 3 or 4 people to operate one machine. Suitable sloping tables should permit one man to tie a large quantity at one sitting. The operator must keep the knotter clear. I have seen a machine tie consecutively for a long time without trouble. In the end some form of mechanical tying must replace hand work. I feel that this is the trend and that we may hasten the day.

Spraying

Certain changes in our methods of spraying for fruit and vegetables are quite evident. Farmers are demanding higher pressure than formerly. A few years ago 150 or 200 pounds seemed satisfactory but today we find 250 to 300 pounds or even more are necessary to effect complete coverage and give reasonable assurance of control of diseases and insects. The question of time and labor-saving is also involved. Higher pressures speed up the job and permit the work to be done more seasonably as well as more effectively. Manufacturers are responding to this demand by putting out larger and more powerful spraying outfits at a higher cost but compensated by a saving of labor. Stationary spraying plants for fruit are coming into vogue. The idea is applicable to vegetables and may, before long, be put into practice.

The Garden Tractor

An argument often presented against the use of the garden tractor is that it requires smoother fields. This is only a reason for better tillage and seed bed preparation. Better use of pulverizing, packing and smoothing machines is the remedy.

Garden tractors at present represent the chief form of mechanical power for the vegetable grower unless we think of the field tractor used in the preparation of the seed bed. Electric power may and I believe should soon occupy an important position. There are certain factors which govern the usefulness of the garden tractor. These are (1) design and adaptability of the machine to the varying types of work to be done; (2) the personal factor in the operator, whereby we know one man may achieve eminent success while the other makes a complete failure; (3) the cost, representing capital investment, which must effect the profit derived from the use of the machine. Any one of these factors may decide the usefulness of the machine to a particular grower. The first is a problem for the manufacturer. There are a sufficient number of garden tractors in use to indicate that it is not a hopeless task. We must therefore look forward to the time when they will be in rather common use. This time will arrive just so soon as the question of adaptability has been solved. Multiple row seeding and cultivating is necessary. We must make the labor-saving feature more prominent. When the tractor replaces the wheeled hoe the saving is prominent even if one row only is considered. When it replaces a horse we must also make it possible for the man to cover so many more rows. Two, three and four row machines must be used. Therein lies the secret of success for the garden tractor. Something of this nature has been done, but not enough. The effort to meet the requirements of adaptability is bringing first one then another machine temporarily into prominence. Gradually we are nearing that untenable goal, perfection.

The personal factor can only be overcome by education. It is for this reason that owner operators are usually most successful, though this is not always true especially when a mechanic is kept to care for tools and equipment. This can be done only when the size of the business will permit. In any case the tractor operator must be carefully selected if he is to be an asset rather than a liability.

It does not now seem reasonable to expect reduced cost of manufacture or sale price of tractors. The use must

justify the expenditure. The number of tractors in New Jersey seems to be steadily increasing and I look upon this as a very encouraging sign.

In Conclusion

I have touched upon several types of machines used in vegetable production: planters, cultivators, fertilizing machines, tractors, sprayers, dusters, transplanters, washers, tying machines, etc. After all the chief object is to reduce hand labor, reduce cost, and increase profits. It may require less intensive use of lands, a greater investment in equipment and quite likely will tend toward larger farms. The small operator must always use the maximum of hand labor, the larger operator must develop and use machines.

The President, Mr. Cobb, called for reports from the auditing, nominating, and resolutions committees.

The auditing committee reported that the Treasurer's accounts have been examined and found in good order.

The nomination committee recommended the re-election of the present officers for another year and the Association voted to accept this recommendation.

The resolution committee gave the following report, which was adopted:

WHEREAS, the interests of the Vegetable Growers' Association, and the Crop Improvement Association are in common regarding most of the subjects presented at the annual meeting, and at present the hours of the meetings conflict, so that it is impossible to attend both, be it.

Resolved, That the officers of the Association make a strong petition to the authorities to so arrange the programs that members may attend the lectures of both associations.

WHEREAS, it has been noted the Governor of the State of Maryland has approved the items in the Budget that promote the cause of vegetable work and horticulture generally, be it.

Resolved, That we unanimously urge the Legislature, now in Assembly, to ratify the same.

REPORT

OF THE

ELEVENTH ANNUAL MEETING

OF

Maryland Sheep Growers' Association

Baltimore, January 9, 1929

The Eleventh Annual Meeting of the Maryland Sheep Growers' Association was held in the Main Dining Room of the Rennert Hotel on the morning of January 9th, 1929. About forty-five members and others interested, gathered to hear the speakers who had come from as far as New York and Pennsylvania to discuss problems and conditions of prime importance to Maryland's sheep and wool industry.

In the absence of the President, Senator Humphrey D. Wolfe, the meeting was called to order by the Secretary-Treasurer, K. A. Clark, and Mr. W. R. Harvey was appointed temporary chairman.

After a few brief remarks by Mr. Harvey in which he expressed his pleasure at such a large and enthusiastic gathering, he introduced Mr. J. P. Healy, District Manager of Swift & Company of Baltimore, who delivered the following address:

OUR LAMB MARKET

By J. P. Healy, Baltimore, Maryland

Members of the Sheep Growers' Association, Gentlemen:

Your gracious invitation was accepted by me, and I am pleased to come to address you about our Eastern lamb market and the Baltimore and Maryland market in particular. I feel I am among friends and can speak as one whose interests are with yours. I was born and reared on the farm, and I am still farming. I have, from boyhood, had

direct experience with raising and feeding cattle, hogs, and sheep. The angle of my business that I am anxious to relate is not the thought of myself personally, nor of my company; I feel that I am speaking for all lamb killers and merchants.

As you perhaps know, about three-fourths of the lambs raised in the United States are produced in those expansive lands beyond the Mississippi, while a large majority of the lamb consumed in this country is consumed right here in our midst, in this Eastern industrial region. Our business is to go to the source of supply, wherever it may be, get these lambs, slaughter them and deliver them to the consuming public. It must be borne in mind that the dictates of the consumer are final. His preferences decide everything. That is true of every commodity our people require, whether it be lamb, pork, automobiles or shoes. In catering to the housewives who buy meat, we have learned that certain things will go, others will not. Cuts of meat must conform to certain specifications of weight, age, color, attractiveness and condition, otherwise go into an unsatisfactory trade that returns worry instead of profit to the lamb killer and a lower return to the farmer.

We know, for instance, that lambs weighing over 85 to 90 pounds do not find ready outlet. In order to merchandise them at a slight profit or perhaps barely break even, we are compelled to buy them from producers at prices that seem out of line with prices offered for lambs of correct weights. For the same reason we are constantly embarrassed by having to take lambs lacking the condition our trade desires. A thin lamb is not as good to eat as one in good flesh. Buyers know this and, try as we may, we cannot sell thin common lambs to the same advantage that we can handle lambs carrying the proper condition. This principle is directly reflected in the price butchers can and do pay for lambs of various grades.

At certain seasons of the year, lamb receipts at all the markets are tremendous, and we are required to handle a much larger volume of business than would be possible if we were not equipped with refrigeration and other equip-

ment to handle it. By distributing the supply more evenly throughout the year we would be in a much better position to handle it with more profit to lamb producers and to ourselves.

I have mentioned a few of these things in an effort to show the close way in which you, as producers, and we, as packers, are connected. Using these thoughts as a basis, it is not difficult to point to a few things that should help you realize a greater return out of your lambs.

I am a believer in early spring lambs for this section. These little lambs always meet a ready market because they come on the market at a time of year when holidays are celebrated and palates are whetted to take them. They grow fast, are easily fattened and are about as easy to produce, and produce right, as anything in the sheep line. They are sold so young that they are seldom, if ever, over-weight. They possess that quality and milk finish that make people willing and anxious to pay high prices.

It seems to me our Maryland producers would do well to specialize in this kind of lamb business because our flocks are small and can be given that extra attention so vital to winter lamb production. Our climate is such that ewes will breed to drop lambs at the right time for the Easter trade. Most of all, we have near-by ready markets for all the choice early lambs we can produce. You may be interested to know that my company buys several carloads of choice California lambs every spring. These lambs are shipped in here in express cars at an expense to us of about $1200 per car. I can truthfully say we would prefer to buy these lambs right here in Maryland if a supply of the same quality and general character were available. The less shipping and handling, the better the carcass is when it reaches the trade, because it is fresh and has not lost its shape, color and attractiveness.

In conclusion, I may say that it is always a pleasure to meet and exchange views with you. We are always glad to have you visit our plants in Baltimore and other cities. Baltimore is one of this country's largest and best livestock market and packing cities. As a lamb market we will

continue to improve only as you who supply us improve the quality of lambs coming on this market. I believe Maryland could profitably increase her sheep production. To the end that all of us will share in the rewards that will come with improvements in our business, let us work tirelessly and unselfishly for those things which will increase our returns and supply our customers with more delicious lamb.

Following Mr. Healy's remarks there was considerable discussion as to the best way to sell lambs. It was pointed out by Mr. Healy that orders and competition are centered at the stockyards and that commission firms there are equipped to take charge of consignments. Mr. DeWitt C. Wing, of the Rural New Yorker, pointed out the advantage of standardizing lambs. He mentioned the progress made by Kentucky and Tennessee as an early lamb section and indicated that the success of lamb growers in that section was largely attributable to the fine way in which they were standardizing their lambs. He said, "if you do not dock the lamb, the buyer will dock you." He suggested a program of sheep management that would put a large enough supply of uniform lambs on the market during the spring season to give our product a reputation in its own right.

It developed that the best way to handle these little early lambs for the present may be for growers to make direct contacts with packers and retail butchers who have a special trade and who are in a position to merchandise this specialty to best advantage.

Following this discussion Dr. Wright was introduced and spoke as follows:

SHEEP PARASITES

By Dr. W. H. Wright,
U. S. Department of Agriculture, Washington, D. C.

Sheep are little subject to serious diseases caused by bacteria and germs. They are, however, susceptible to parasites and parsitic disease. Although sheep rarely have tuberculosis or abortion and have almost nothing comparable to hog cholera among swine, they seem to be particu-

larly susceptible to the attacks of parsites. In many cases where pneumonia and similar ailments take toll, the primary cause is a weakened condition due to the presence of parasites. The damage from sheep parasites is greatest among lambs. This may be caused by their possessing less resistance and by their more sensitive nerves. Possibly they are more easily broken down under the influence of parasitic injuries than are the nerves of old sheep.

Fortunately most parasitic trouble with sheep can be prevented. In the case of internal parasites, pasture rotation is of prime importance and can be used to almost entirely avoid the internal parasite problem. Those parasites living in the digestive tract produce eggs or young worms which pass out into the manure and thus infest the pastures. The application of winter manure to grounds not grazed by sheep is of considerable assistance.

There are certain parasites which have intermediary hosts. Dogs are a particular menace in this connection. Certain species of dog tape-worms spend part of their life cycle in the sheep. By keeping the premises free of dogs this trouble can be averted.

For the sake of convenience in discussing this subject, I shall first confine my remarks to the internal parasites and later take up the external parasites.

Internal Parasites

Stomach Worms: Of the internal parasites, one of the most common and at the same time most pernicious is the common sheep stomach worm. This parasite is prevalent in practically every flock in this end of the country. Because of the nature of the grazing practices and climatic conditions, this parasite is fortunately not a problem in the Western sheep grazing country. With small pastures and restricted grazing, combined with favorable soil heat and moisture conditions, this parsite comes into its own in these sections. The presence of this worm is noted in the fourth stomach of the sheep. This is the last stomach and the one which opens into the small intestine. To locate stomach worm trouble, therefore, go into the sheep's abdomen, pick up the

small intestine and follow it back to the stomach. Open up this stomach, and, if stomach worms are present, they will present themselves to you in the form of small white and red, hair-like worms, ranging from one-half to one inch in length. These parasites are thought to injure the sheep in three different ways; first, by absorbing food material that should go to the sheep, secondly, by sucking blood from the stomach linings, and thirdly, by emitting a toxic substance which destroys the red blood corpuscles and produces an anæmic condition in the system of the sheep.

The symptoms of this trouble are evidenced in a general lack of thrift, white, pale eye and nose membranes, scouring, and dead, papery condition in the skin and wool. In extreme cases there may be a swelling under the jaw or under the pendant portions of the body. These are dropsical in character. When the disease has progressed to this state, the chance of recovery is very slight.

Fortunately the treatment for stomach worms is relatively simple and effective. The most common one is the treatment recommended by your Extension Service at the University of Maryland, which is as follows:

1. First keep the sheep off feed and water for 18 hours before drenching.

2. Go to your druggist and buy 1 ounce of pure copper sulphate (bluestone). This is enough material to make 3 quarts of sheep drenching solution which is sufficient for 20 to 25 sheep. Where tapeworms and other parasites besides stomach worms are known to be present, the above solution can be improved by using 1 fluid ounce of nicotine sulphate (Black Leaf 40) mixed into the copper sulphate solution.

3. To make the solution, simply dissolve the copper sulphate in 1 quart of hot water and add 2 quarts of cold water, making a total of 3 quarts of solution.

4. Where the nicotine sulphate (Black Leaf 40) is used, simply add the 1 ounce of nicotine sulphate to the 3 quarts of prepared copper sulphate solution.

5. In handling this solution use a glass, earthernware, or other non-metallic container, since it will corrode metallic vessels.

6. The solution is now ready to use and should be given in the following doses:—
   Mature Sheep:—3 to 4 ounces, depending upon size and vigor.
   Yearlings and Old Weak Sheep:—2½ to 3½ ounces, depending upon size and vigor.
   Lambs:—1 to 2 ounces, depending on age, size and vigor.

7. An ordinary baby bottle is good for drenching, because it will not break easily, is graduated in ounces and has a slim neck.
   A rubber necked bulb syringe is another convenient drenching instrument.

8. Allow the animal to stand while treating, and do not hold the head too high nor try to drench too fast.

9. After the treatment has been given keep sheep off feed and water for about 5 hours.

10. Treating once every three weeks during the summer pasture season is advised; in severe cases the second treatment should be given one week after the first; thereafter treatments every three weeks should be effective.

11. WARNING:—Measure the water and the dose accurately. Carelessness in this is liable to result in losses by death.

In cases where tapeworms are known or thought to be present, it is always well to add Black Leaf 40 to this copper sulphate treatment. One ounce of Black Leaf 40 to 3 quarts of the copper sulphate solution is considered correct.

Measures of stomach worm prevention are based upon its life history. We know that the disease is spread by eggs produced by the female worm. These eggs escape in the

manure onto the pasture and infest sheep which later come along and pick up the young parasites, which, by this time, have hatched and crawled up onto the grass blades. Since it takes only a few days for these eggs to hatch and crawl up the grass blades, it is suggested that a system of grazing be carried out, which allows frequent pasture rotation. The longer the sheep are on a pasture the more dangerous it is as a grazing ground. Flock owners who change their flocks from one pasture to another every two weeks have little trouble with stomach worms, provided their sheep are fairly free of these pests to begin with. Heavily infested pastures are not safe for sheep grazing short of one year's time after the pasture has had no sheep on it. It is even better to allow the land to lie idle or be used for other purposes for two years instead of one. Because lambs are so susceptible to these worms, more emphasis should be placed upon their safety and welfare than upon that of old sheep. It is preferable, therefore, to give lambs the benefit of higher, dryer pastures rather than low, moist pastures where the chance of infestation is greater. Plowing may also be resorted to as a means of cleaning up a pasture. Freezing and thawing and extremely dry weather are highly destructive to stomach worm eggs and larvae.

The best control measure for use in the case of sheep kept under usual farm conditions seems to be a regular application of the copper-sulphate treatment. At the Bureau of Animal Industry Farm at Vienna, Virginia, it has been found highly beneficial to dose sheep with copper-sulphate drench every three or four weeks throughout the year. Sheep so treated have proven to be much healthier and more productive of both mutton and wool than untreated sheep keep under the same conditions except for the treatment.

Grub in the Head: A common parasite in this section is the parasite known as grub in the head. This parasite is a fly, the female of which deposits a tiny grub on the sheep's nostril or upon his nose. This grub works its way up into the nasal region in the skull of the sheep and there lodges until time for its emergence. The time spent in the head

of the sheep is several months. During this time nothing is apt to happen, nor injury occur, outside of some irritation to the membrane, unless for some reason the grub becomes extra large or happens to work into a seam in the sinuses or skull, thereby causing trouble. Normally the grub goes out of the head, drops to the ground and burrows into the soil to spend some time there, before it emerges again as a fly. This process is not painless to sheep, but ordinarily causes little trouble or no death, unless there is some irregularity in the processes just mentioned. This pest can be kept from bothering sheep by smearing the noses with ordinary pine tar throughout the summer months. This is possible either by going over the flock at intervals of two to three weeks and applying the tar with a paddle or by putting the salt in a box with a hole in the top. Keep the edges of the hole smeared with the tar in such a manner that the sheep will automatically tar their own noses, when they get salt. The effect of the tar is to repel the flies and in this way prevent the female flies from depositing the tiny grubs on the sheep's noses.

Tapeworm: Tapeworms are common parasites to sheep and cause more trouble than is ordinarily attributed to them. Adult tapeworms are usually found in the small intestine where they attain considerable length. Worms as long as three or four feet are not uncommon. Since the life history of the tapeworm is little known and the treatment for them is by no means established, it is difficult to give much information of a helpful nature along these lines. The Black Leaf 40 treatment is known to be as effective as any.

Bladderworms: Unfortunately, bladderworms in sheep are a phase of the life cycle of tape worms in dogs. In eating infested sheep flesh the dog takes in the bladderworm which develops into a species of dog tapeworm. The eggs of this tapeworm are passed off with the manure which, when voided on sheep pasture, gives it a good opportunity to be picked up by the sheep.

Gid: The gid parasite of sheep is another parasite which spends part of its life cycle in the sheep and the other in

the dog as a tapeworm. The sheep gid makes its appearance as a large cyst attaining the size of a hen's egg or larger. It is composed of a thin membrane containing a large amount of fluid. This cyst, when eaten by a dog develops into a tapeworm. When this gid arrives at the brain or spinal cord of a sheep it causes trouble. The only treatment is surgical. This is satisfactory only when the cyst is on the surface of the brain.

There are a host of internal parasites, such as the whipworm, lungworm, the nodular worm and the liver fluke. Of these the lungworms and liver flukes are of greatest importance. The lung worm is best handled by preventive measures, such as sanitation and pasture rotation. The treatment for sheep liver flukes is also preventive. The manure from infested sheep should not be spread on pasture land. Sheep should be kept off wet pasture in sections where the fluke is prevalent. Swampy areas should be drained.

External Parasites

Lice: The most treacherous of all external parasites affecting sheep in Maryland are lice. Sucking and biting lice occur on most parts of the body. However, they are usually noticed in the region of the neck and shoulder where the sheep rub and scratch themselves for relief. These lice are very small in size. They can be seen with a good naked eye. The losses they cause are represented in the lack or thrift in the flock and in the loss of wool. It is impossible to keep the flock of ewes in thrifty healthy condition when they are infested with lice. Although their appetites are keen and they consume abnormal amounts of feed, it seems to do them no good. The treatment consists of dipping the sheep twice at an interval of about ten to twelve days using any of the good coal tar dips. This dipping should be done in the spring after shearing and in the fall just before the sheep go into winter quarters. If impracticable to dip them both of these seasons, the fall dipping is perhaps the most necessary.

The Sheep Tick: The sheep tick is a large brown tick which occurs on most all parts of the sheep's body. Unless

the ticks are extremely numerous on old sheep, they really do not cause much trouble. In the spring, however, these ticks crawl off the old sheep and onto the lambs. They really cause a lot of trouble and unthriftiness in the lambs. The treatment for them is the same as for lice.

The Scab Mite: The scab mite is one of the most wretched of sheep parasites. The mite is microscopic in size and usually has made good headway before it is discovered, whether on a single sheep or in a flock. The scab mite burrows into the skin of the sheep and there, under the protection of the scab which is formed, thrives and multiplies at a great speed. The treatment consists of dipping sheep at least three times, using the lime sulphur dip. Other dips are known to be as effective, but the Government only recognizes lime sulphur in the handling of this disease. Since this disease is one which the Government especially desires to suppress, it is usually possible to get Government supervision of outbreaks which may occur.

Any of you are at liberty to examine closely the specimens carried in these vials which are before you. These specimens will give you a good idea of the parsites I have been speaking about.

At the conclusion of Dr. Wright's address a number of questions were introduced and answered. The discussion was very valuable. Sheep parasites cause thousands of dollars loss annually in Maryland. Following this discussion Mr. W. L. Henning, Secretary of the American Southdown Breeders' Association and sheep expert from Pennsylvania State College, was introduced and addressed the meeting.

BRITISH FLOCK MANAGEMENT

By W. L. Henning
State College, Pennsylvania

Mr. Chairman, and Members of Maryland Sheep Growers' Association:

It is with great pleasure that I came to meet with the sheep men of your State, to show you slides of sheep management in the British Isles and to discuss with you some of our vital sheep problems of the East.

I was keenly interested in what Mr. J. P. Healy had to say concerning our lamb situation. Here we are with the best markets of the United States right at our door and we are asleep at the switch. Mr. Healy told us that his company pays as high as $1200.00 per carload transportation charges on a carload of lambs from California. Why cannot we eastern farmers save that $1200.00 and produce market lambs of sufficient quality to attract attention in and around Baltimore. I believe we can produce lambs of sufficient quality and I know we have a few farmers marketing such lambs at a nice profit.

I have with me some lantern slides and photographs taken during my summer on the British Isles and in France. Your chairman has suggested that I say something about our experimental work at State College, and I shall say something about hot-house lamb production after the slides are shown.

I had the pleasure of spending the entire summer of 1927 in visiting the leading livestock shows and fairs on the British Isles and in studying sheep breeding, management and marketing problems in different sections of England and Scotland. I visited over 35 of the best purebred breeders of the common mutton breeds of sheep in Great Britian and tried to observe and bring back home some of the lessons to be learned over there.

I will start out with the slides and illustrate the points as we come to them. Most of these slides are on sheep management, but I have included cattle, swine and horse pictures as well, and an occasional slide of general interest.

We will start our tour at the Three Counties Show held at Worcester. The local shows in Great Britain are very similar to the ones held in this country, with more interest being given to livestock. This show would compare favorably with some of our leading State fairs in this country. One characteristic of the English show was very interesting to me. Every day of the week beginning Tuesday of fair week, a general parade of livestock is held before the large grandstand. All of the prize winning cattle, horses, and goats are paraded before the public. It is a fine spectacle.

Their shows are not stationary as in this country, instead they travel from place to place different years. For example in 1927 the famous Royal show was held at Newport, Monmouthshire. This coming year it will be held at Nottingham. This plan gives people in different sections of the country a closer view and a better chance to support the industry. For that reason the buildings are often temporary and roads inadequate on the fairgrounds.

You will note the different breeds of cattle and sheep at the Three Counties Show. Blue Albion breed of cattle, the old Longhorn, Belted Galloway, as well as Kerry Hill Sheep, Welsh Mountain, Wiltshire of Western Horn and other common breeds in Great Britain but very little heard of in America.

We have come to some photographs of stud rams used in famous flocks in England. You are now seeing part of the stud ram flock of Lady Fitzgerald's Buckland Farm twelve outstanding rams.

That is my first point to bring home to American shepherds. The English breeder spends more time and money and is more careful and particular in the selection of his breeding rams.

Secondly, many English sheep men test out or prove their rams before they go in to the stud ram flock. For example, if a large purebred breeder has eight promising ram lambs which he would like to try out for stud rams, he might breed each one of these ram lambs (in case of a large breed as the Hampshire) to six or eight ewes each the first year. If one or two of these rams proved a good sire he would be promoted over into the stud ram flock. A very fine idea I think. Please do not get the impression ram lambs are always used in England, these rams may first be tested as yearlings.

The third and most important practice in English sheep management is the universal use of special forage crops for summer pasture. Their sheep are grazed in hurdles. Movable hurdles as you will see here on the farm of Mr. Goldsmith, one of the largest and best Hampshire breeders in England. Vetches, tares, legumes and similar forage

crops are grown for this particular purpose. Movable hurdles are made in convenient lengths so that the shepherd can move them easily from place to place. The hurdles are moved once or twice a day so that the lambs always have fresh pasture before them. This system helps to control intestinal parasites.

The fourth, these lambs are fed and fed well while in these very fine forage crops. Look at this picture—notice there feed troughs with little wheels on one end, so the shepherd can move them easily. If the American sheep man could only realize the importance of nutrition, proper feeding of his sheep, he would make more dollars and have less trouble with parasites.

I'll admit labor is cheap in Great Britain, and that is a factor we must not forget. There are many shepherds over there, and competition is keen. One large breeder may have four or five shepherds, one looking after the yearling rams, one the yearling ewes, one ram lambs, one ewe lambs, one aged rams and one on the show flock, but it must be remembered they think it pays to look after them, and superior shepherding in this country might increase profits.

Let us take a short trip up into Scotland, a beautiful country, a wonderful people, and a great place for sheep. I spent some time in Pertshire on the estate of that world-famous Shropshire breeder, Mr. Thomas A. Buttar at Corstan, Coupar Angus. He has a flock of over 800 head of the finest Shropshires I have ever seen. Look at those yearling ewes. They will go into Mr. Buttar's breeding flock. Some may have wrinkles, Mr. Buttar does not get worried over a little fold on the neck of a sheep, or an ear a sixteenth of an inch longer than it should be, he is interested primarly in the mutton form, leg of mutton, back, and fleece on that sheep, and I received my best lesson when he told me of those facts.

Down on the border country we saw thousands of Cheviots, Leicester and crossbreds by various sires sold at auction on a commercial basis. Times are hard on the other side, but the sheepmen are plugging along and doing as well financially as any of our farmers. They are observing

modern methods in breeding, feeding and management. In conclusion with regard to the sheep business of Great Britain, I might say that I did not see one single scrub ram in use all summer. Furthermore, British sheepmen go out and pay good prices for their sires. I saw a Southdown ram auctioned off for 100 guineas (about $512.00), which is not an uncommon figure for a ram over there. We must pay more attention to our breeding operations in this country.

Just a few words in the short time left concerning hothouse lamb production. At the Pennsylvania Experiment Station we have been running experiments for the last five years on this very high specialized type of lamb production. We went to Washington County, Pennsylvania, purchased just good grade Merino ewes, and bred them to a purebred Dorset ram. We keep those F_1 (first cross) ewe lambs and have another lot of 32 head of the crossbred ewes which are bred to a purebred Southdown ram.

This year past the ram was placed with the ewes in June, bringing the lambs at the last of October or first of November. These lambs were marketed at from 6 to 8 weeks of age as light as 27 pounds live weight and at an average of about $12.00 per head. I feel that these F_1 (first cross) Dorset-Merino ewes are just about as good a foundation ewe for producing hothouse lambs as you can find. Only they are hard to get. The secret, if any, to early lambs is good ewes; flushing them at breeding season; and good feed and care. Push the lambs after birth, give them feed in the creeps early and have the lambs fat when they go to the market.

REPORT OF THE SECRETARY-TREASURER

K. A. CLARK, College Park, Maryland

Mr. Chairman and Members of the Association:

Our Association has been active the past year. We held one of the best annual meetings we ever had a year ago. The Union Stock Yards Company entertained the Maryland Swine Growers' Association at a banquet to cap last year's meetings, and our members were invited to attend.

It was another one of those history-making occasions, and everyone was sent home in a humor to do things with renewed enthusiasm and intelligence. Early in the year, Mr. C. C. Flanery, Sheep Specialist in Tennessee, made inquiry for a carload of purebred Hampshire yearling rams. A load of 33 head were assembled and shipped to Tennessee on May 2nd. They brought our breeders $1058. Those having rams in this shipment were Mr. Clinton E. Miller, Weverton, Dr. C. H. Conley, Frederick, Mr. G. B. Fenwick, Glyndon, Belair Farms, Bowie, University of Maryland, College Park, and the Animal Industry Farm, Beltsville. Mr. Flanery reported that the rams made a satisfactory impression upon their arrival in Tennessee.

Two purebred ram sales were held during the year. The College Park sale was held on Farmers' Day, May 26th. The average of the sale was $30.46 on 26 head. Of these 26 head, 15 head were rams and 11 head were ewes. The consignors were Mr. H. P. Miller, Grantsville, Mr. Robert Moore, Pikesville, Mr. H. G. Hutton, Brighton, and Belair Farms, Bowie. In the Centerville Sale held July 19th, 25 head of rams were sold for an average of $38.45. The consignors were Mr. M. C. Sherman, Queenstown, Mr. Edward P. Cockey, Stevensville, and Mr. H. G. Hutton, Brighton.

The Association offered the two trophies on pens of Hampshire and Shropshire lambs at Timonium. These cups are annual cups until they have been won by the same exhibitor three times, at which time they become his permanent property. The Hampshire trophy was won by Mr. Wm. Hines of Brighton, Maryland. The Shropshire trophy was won by Mr. Hobart G. Hutton of Brighton, Maryland.

Our membership for 1928 was 58 members. During the year about 500 News Letters were sent out to all members. The records show all bills of the Association paid and a balance of $33 in the bank. I suggest, Mr. Chairman, that an auditing committee be appointed to determine the correctness of this report.

At the motion of Mr. Hines, which was seconded and passed, the report was accepted as correct.

Mr. Harvey: At our last annual meeting four members

were appointed from this Association to serve on a committee with four members from the Swine Growers' Association to go over the proposed consolidation of these two and to make recommendations concerning the formation of a new organization for all livestock interests in Maryland. Mr. Clark was appointed Secretary of that committee and will give his full report at the joint meeting this evening. I think it is well however, to bring this matter up for discussion at this time.

Mr. Clark: The joint Committee instructed me to make a favorable report on the consolidation, looking toward one large livestock association. I have prepared the following resolution which has the committee's support and which, if passed, will take care of this Association's obligation in effecting the consolidation.

WHEREAS, It seems the best interests of Maryland Sheep Growers may be better served by a larger, stronger, more influential organization representing all livestock interests in Maryland, and

WHEREAS, Our identity should still obtain in the form of a sheep section within the new and larger organization,

Be It Therefore, Resolved: That the chair appoint a committee from our membership with full authority and power to speak and vote in behalf of this Association in the formation of the new organization, all of which pends the interest, support and move for same at the joint meeting to be held tonight at the Claremont Hotel.

Mr. Fenwick: It seems to me we are losing our identity as sheepmen if we are absorbed into another organization. The advantages do not seem sufficient to justify such a step. I think we ought to go out and build up this present association to a respectable membership, say 500 members, and I am personally willing to get my share of them.

Mr. Clark: Our identity should not be lost in the new organization because it will still be possible for us to conduct our ram sales and annual meetings separate from other interests. Perhaps this could best be accomplished by establishing a sheep section, but my suggestion is to have a sheep committee within the general organization

formulate plans and conduct those things of interest and concern to only sheepmen in a way satisfactory to both the sheepmen and the rest of the organization. Furthermore, we are about ready for purebred sheep organizations and they will probably seek that part of the sheep program now of greatest interest to the purebred flock owners.

Mr. Wing: If I were a sheep grower in Maryland, I should want to have and belong to a sheep association and be identified with it. I am in favor of organizations designed to deal with specific things.

Dr. Earle: It seems there will be little difference with a general organization as compared to the present setup. I am in favor of the consolidation because I believe it affords a wider influence, more power financial and political, and does not involve any drawbacks of serious nature.

After considerable discussion Mr. Weagly moved the adoption of the resolution. It was seconded and passed.

The committee appointed in pursuance of the resolution were Mr. W. S. Chichester, Mr. Hobart G. Hutton and Mr. R. C. F. Weagley.

It was moved by Mr. Hines that the present officers, committees, Farm Bureau director and delegate hold office until the new organization is perfected. This motion was seconded and passed.

(Adjournment.)

REPORT

OF

ANNUAL MEETING

OF THE

The Maryland Tobacco Growers' Association

Baltimore, January 10, 1929

The meeting of the Maryland Tobacco Growers' Association, held with the Maryland Farm Bureau Federation, was called to order by Mr. Wm. L. Marbury, Vice-President of the Association.

Mr. Marbury said that more thought and effort should be given to getting more tobacco from the same amount of land through scientific farming methods, referring to the fact that Mr. H. B. Leary's barn-heating process for curing tobacco has proved a success and should be used more extensively. He said that the people consider the Maryland Tobacco Growers' Association as a commission merchant instead of knowing the Association is their own business and could be a great benefit to them, and he pleaded for increased membership.

Mr. J. B. Duvall, Secretary, was then called upon. Mr. Duvall brought it to the attention of those present that he found chain farming had been started, and the only way for the farmer to retain his individuality as a small farmer was through organization, stating that the Maryland Tobacco Growers' Association was considered the biggest farmers' asset in Southern Maryland. He requested those present to take the good words home to their neighbors.

Mr. Gardiner, who was then called, spoke on "The Tobacco Market Past and Present."

Mr. Gardiner said he didn't want to say much about the past of the tobacco industry; as he did not want to bring to the minds of the farmers the past under the conditions he had to work in Southern Maryland, saying, "God knows we

want to forget the past of the Maryland tobacco industry, and only God knows what the future of the tobacco industry will be; as this depends on the farmer's future actions." He stated that the whole future was summed up in a few words, which had been brought to the farmer from heads of all nations, calling attention to the fact that the new McNary bill would do nothing except for the organized farmer, which fact was contained in the bill. Mr. Hoover said that it was impossible to put a President in the White House or a law maker in Congress and expect them to settle the farmers' interest unless the farmers organized.

Mr. Gardiner stated he had confidence in the people of Southern Maryland enough to know that we are not going back to the old conditions. There never was a brighter outlook for the farmer than the present, if he would first organize; as supply and demand had absolutely nothing to do with what would be the future of the tobacco industry, unless the farmer was organized, which had been proved on many previous occasions.

A few words were said relative to the market situation of 1928, bringing to the attention of those present that the Maryland Tobacco Growers' Association maintained the market throughout the year, and that the market closed as high, for all except the very top grades, as it was anytime during the year. He said, "The Maryland Tobacco Growers' Association never sells at an average; as every hogshead carries its own price, which is bid on by the buyer and written in his own hand, and the Association does not state a price it will take for tobacco." He explained the reason why the top grades of tobacco were lowered during the year, but how the Association maintained the general high average for tobacco against that of the competitive selling agencies.

The Association sent a questionnaire to each of the sixteen tobacco growing States in the United States in order to have sufficient knowledge of what the Association should expect to get for tobacco. The comparisons showed that the storm that ruined tobacco swept through the whole United States, with the exception of Connecticut, which is a cigar tobacco growing State, which storm made the smallest sup-

ply of cigarette tobacco against the greatest demand that was even known. Cigarette consumption increased from 8,000,000,000 to 9,000,000,000 a year since 1923, and the 1927 consumption was 93,000,000,000, and 1928 would be 106,000,000,000 or over, which was the greatest consumption that ever existed. In contrast to this Mr. Gardiner showed where stocks of tobacco in the hands of the manufacturers were very low; and with the situation standing as it is, good prices could be had for tobacco during the coming season if the tobacco farmers of Southern Maryland were properly organized. Statistics were produced which showed that the smaller Maryland crops sold for a lower price than the larger crops, which was because of lack of organization.

Mr. Gardiner conculsively showed that if the Maryland Tobacco Growers' Association had not been on the market, Maryland would not have been the only State in the sixteen tobacco growing States of the United States, that sold its tobacco for more money in 1928 than it did in 1927. These results could be produced with semi-organized farming conditions; but if completely organized the Maryland Tobacco Growers' Association could have got the real value of the tobacco, which was very much more.

The measure of success of an organization is not how much money it made during the year, but by how much money the Association made for the farmer by him being a member, and what service was rendered him.

Mr. Clarence M. Roberts was then called upon to speak, whose subject was "My Viewpoint." He said his viewpoint was that unless the tobacco farmers very soon appreciate the value of organization and what the organization properly organized can do for the farmers' benefit, it will be appreciated too late. He said,"If the Maryland Tobacco Growers' Association was organized to the extent of the Dairymen's Association, you, as they, would know what you will get for your tobacco a year from the present date. The Maryland Tobacco Growers' Association is functioning better than Associations in some States that are really looked upon as tobacco growing States."

The thing affecting Mr. Roberts' viewpoint is why the peo-

ple in a gold mine there, will not help themselves to properly work that gold mine. He stated that organizations and associations were simply large bodies of people for a common interest, and the power of combination has been proved as being the possessor of power. The farmer has the necessities of life but does not control them.

Mr. Roberts said he knew that if it had not been for the benefits brought to the farmer of Southern Maryland, many of the mortgages held there would have been foreclosed; and if the Association would quit functioning, there would be so many foreclosed mortgages that there will not be enough to buy the land.

Mr. H. B. Leary was then called upon to express the result he had from the experiments he made with heat in his barns.

Mr. Leary stated he thinks there are some benefits to be accrued from helping the elements, which get big sometimes, to cure the tobacco. He fitted a barn with a heating apparatus to get as close as possible to ideal conditions for curing tobacco, and the first year after installation of the heating plant, some tobacco was put in the heated barn and some in the unheated barns to make comparison of curing. The tobacco was subjected to 70 to 80 degrees, and when it was cured was considered good tobacco and sold for an average of from 40c to 41c; the tobacco put in the unheated barns sold for an average of from 18c to 20c. He had 8,000 pounds of tobacco in these barns, which would have made a difference of from $1,700 to $2,000, and the plant only cost $700. Since that time Mr. Leary stated another barn has been fitted with a heating plant, and he strongly recommended it to be put in any barn; as more tobacco could be safely put in a barn that was properly heated.

Mr. Leary said that at a meeting in Washington, President Coolidge stated, "The Government has done much for the farmer, and intended to do more for them, but it was to be entirely understood the Government could do nothing for the farmers unless they organized to have representatives to confer, so the Government could listen and help them, and between them there would probably be results beneficial to

the farmer; and if the farmer would take advantage of his opportunity, he must first be organized."

Mr. Brown, Manager, then read the financial report of the Association.

Meeting then adjourned.

REPORT

OF

SIXTH ANNUAL MEETING

OF THE

Maryland Swine Growers' Association

Baltimore, Md., January 9, 1929

The Sixth Annual Meeting of the Maryland Swine Growers' Association was held at the Claremont Hotel, Union Stock Yards, Baltimore, Wednesday evening, January 9, 1929. The meeting took the form of a banquet-meeting, as well as being a joint session with the Maryland Sheep Growers' Association. The purpose of the joint session feature was to consider the advisability of effecting a consolidation of the two associations. At the January, 1928, meetings of these Associations there was some discussion of the suggestion, a committee was appointed to discuss the proposal, and it was decided by the Committee that a joint session was desirable. The capacity of the dining room was taxed almost to the limit; good fellowship prevailed; the banquet was notably excellent with reference to both quantity and quality of viands. There were numerous expressions to the effect that more events of this kind would be both pleasant and helpful to the livestock producers of the State. There was much commendation of the fine hospitality which was displayed by the Stock Yards officials, commission men, and the hotel management. It is confidently believed that out of the closer acquaintance between people engaged in various lines of livestock activities in Maryland which is fostered by such meetings as this, much of constructive development will result. The saying "Get acquainted with your neighbor—you might like him" seemed to apply to the attitude of those who attended this banquet-meeting.

Before the repast was begun, Mr. J. H. Baugher, President of the Union Stock Yards Company, in well-chosen words that rang true with the spirit of genuine hospitality, welcomed the two Associations and gave renewed assurance of a desire to co-operate in every possible way in every effort to further the best interests of Maryland's livestock industry. That his expression was taken at full face value was evidenced by the enthusiastic applause which followed his address.

After the dinner, President W. R. Harvey introduced a number of speakers who were not listed on the formal Association program. Each of them responded with brief speeches that were full of optimism concerning the future of the livestock industry. Many suggestions relative to constructive work by a State livestock organization were offered. The following gentlemen were introduced by President Harvey and were heard with much interest:

Dean and Director H. J. Patterson, University of Maryland.

Mr. W. C. Davis, U. S. Department of Agriculture.

Dr. F. B. Bomberger, University of Maryland.

Mr. W. H. Pew, Briar Cliff Farms, Pine Plains, N. Y.

Dr. DeVoe Meade, University of Maryland.

Prof. W. L. Henning, State College, Pennsylvania.

Mr. J. W. Jones, Olney, Montgomery County.

PRESIDENT'S ADDRESS

By W. R. Harvey, Baltimore County

Members of the Maryland Swine Growers' Association: I am very glad indeed to see so many present at this gathering, and yet one can scarcely wonder at this, when we have such genuine hospitality extended by both the Union Stock Yards Company and the management of this Hotel. The meals served to us here, and the good time we have right here in this room once a year are the subject of conversation whenever a number of us stockmen get together at any time.

We are growing and doing a good work as we go along, and yet we feel that there are greater things ahead for us,

and for this reason the matter of consolidating the Swine Growers' and Sheep Growers' Associations into one association, which we trust will be much larger and stronger, in every way, is going to be considered here tonight. I trust this matter will be acted on definitely, and, if it is, I hope that every one of us will co-operate with the officers of the new association to make it one of the largest of its kind in existence. This can be done if every member here, as well as those not present, will just bring in the names of some of our neighbors who are interested in good livestock. And we can assure them that they will be benefitted by becoming members and attending our annual gatherings.

We have, I am sure, the best lot of speakers that we have ever been able to have with us, and the subjects that they will discuss will be so thoroughly gone into that we will be greatly interested in what they will have to say to us.

Our time is going to be so fully taken up until a late hour, that I am not going to take any more of it with anything that I may have to say and will close by thanking each of you for your presence here tonight and for the interest and co-operation extended during the past year.

REPORT OF SECRETARY-TREASURER

BY B. E. CARMICHAEL

The past year has been one of about average activity for the Maryland Swine Growers' Association.

The dinner-meeting, undertaken last year as a possible "best way out" of what seemed to be an unfortunate meeting-hour assignment, turned out to be perhaps the best annual meeting of this Association held up to that time. Maryland Swine Growers' Association members and a number of others were guests of the Stock Yards Company, and there was an enthusiastic agreement that the hosts left nothing undone to provide a fine meal and a pleasant time for all in attendance. The speakers included: President J. H. Baugher of the Union Stock Yards Company; Honorable William F. Broening, Mayor of Baltimore; President

Raymond A. Pearson of the University of Maryland; Doctor H. J. Patterson, Director of the Experiment Station and Dean of the College of Agriculture, University of Maryland; Director T. B. Symons of the University Extension Service; President W. R. Harvey of this Association; Mr. John H. Zeller of the U. S. Department of Agriculture; Dr. I. K. Atherton, in Charge of Hog Cholera Work for Maryland; Mr. G. Carlton Oland, of Montgomery County, winner of the 1926 and 1927 Maryland Litter Contests; and County Agent O. W. Anderson of Montgomery County.

The Maryland Litter Contest was given what was considered a good start, all things considered, when sixteen entries were made from six different counties. As is too often the case, a number of the entries were never brought, as a unit, to the weighing age of 150 days. It is encouraging to note that four entries, in three different Counties, succeeded in attaining the desired weight of at least 1500 pounds in 150 days. Two of these litters were owned by one person, as will be disclosed later during this meeting.

Due, perhaps, to the relatively small profits from hog raising during a considerable part of the year, the membership list, 44, was not as large as was desired. However, the membership has not fallen to an especially discouraging low level.

A number of News Letters were issued during the year, but it is not altogether certain that they have been of the character to meet a very strong need. The printed Report of the January, 1928, Annual Meeting was sent to each member of the Association. Additional numbers of this Report are available and may be secured upon request.

The financial condition of the Association is shown in the following statement:

Financial Statement

RECEIPTS

Balance reported last meeting	$37.63	
1928 dues collected after last meeting	28.00	
Total Receipts		$65.63

EXPENSES

Jan.	6	Baltimore Coach Company..... Transportation of Association Members and others to Dinner-Meeting.	$16.00	
Feb.	1	Farm Bureau Federation, Association dues	20.00	
Mch.	24	The American Swineherd, 36 members' subscriptions	3.60	
April	5	Engraving, refinishing and lacquering cup	2.00	
April	26	Stamps, paid in currency..... Stamps used for subscription to American Swineherd.	1.00	
June	14	Letterheads and envelopes.....	7.50	
Jan.	7	George Myers, printing Banquet-Meeting tickets	1.00	
		Total Expenses		$51.10
		Balance		$14.53

Mr. W. L. Robison, of the Ohio Agricultural Experiment Station, Wooster, Ohio, was the first scheduled speaker of the meeting to be introduced by President Harvey. Mr. Robison presented in a logical and interesting way much valuable information concerning the efficient production of hogs. His address follows:

BREEDING, FEEDING AND SELLING THE LIGHT WEIGHT HOG

BY W. L. ROBISON

The problems commonly met in the field of swine production may be classified under the headings of breeding, care and management, feeding and marketing.

Breeding determines the possibility or limits the capacity of an animal to make rapid and economical gains. Feeding and management determine how nearly that possibility my be approached.

What Type

Breeding immediately brings up the question of type. Type should be influenced largely by the kind of pork products in greatest demand, or for which there is the most ready sale at remunerative prices, and by its effect upon such factors as hardiness, prolificacy, rapidity of growth and

the efficient utilization of feeds. In spite of considerable diversity of opinion as to the type best adapted to the needs of the industry, American hog producers have certainly brought about a vast improvement in their animals. The fixing of a distinct type of hog for the country is complicated by varying conditions of production and by wide variations in demand, not only with respect to time but also to localities. Then too, until recently at least, the relative merits of different types were merely matters of speculation.

A few investigations now provide some data as to the effect of type on the cost of production and the quality and value of the pork produced. The Illinois Station compared pigs of the very chuffy, chuffy, intermediate, rangy and very rangy types. A thing brought out by these experiments that was doubtless a surprise to many, was that in the hog studied, the length of body, exclusive of the head, neck and legs, varied with the different individuals rather than with type. Stated in another way, the differences in type were due largely to differences in length of head, neck and legs. According to Professor Bull, hogs of the very chuffy type made slow, expensive gains and were too fat for the best quality of pork when killed at 225 pounds. Hogs of the long legged, rangy type made good, economical gains and cut out well in the high priced cuts but were soft and unfinished at 225 pounds. Moreover, the cuts from many of the animals of extreme type were rough and coarse and heavy boned. Hogs of the intermediate type made as good and as economical gains, and cut out as well as the rangy hogs. They were firm and finished but not too fat at a weight of 225 pounds, and their cuts were more acceptable to the trade.

A recent Ohio test is of interest in this connection. It was planned in such a way as to enable a study to be made of the effect of grain, fibre, type, and weight on the yield of pork cuts and on the relative values of the live animals to the packer. Three lots of ten Yorkshires each, and three lots of ten Durocs each, were fed corn, barley and oats respectively. All of the rations were similarly supple-

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mented. With the corresponding cuts valued alike, the pigs of the bacon or Yorkshire type were worth 24 cents more per 100 pounds to the packer than were those of the lard type. This higher value is accounted for by a small difference in dressing percentage, a little less fat and a slightly larger proportion of lean cuts and of bacon. Carcasses low in fat showed relatively high percentages of bony cuts. That the bacon hogs were actually longer than the lard hogs was indicated by an average of 1.5 inches greater length of loin.

The firmness of the fat is a factor to which packers attach considerable importance. Unfortunately, a thin covering of fat and a firm fat are apparently irreconcilable conditions, particularly for hogs fed corn, or our common feeds. Data gathered by those engaged in the co-operative soft pork investigations, show that the fat of pigs of medium type, fed corn and tankage, does not reach a satisfactory degree of firmness until a weight of 175 or 180 pounds is attained.

Type thus far in America has been determined largely by show yard standards and, possibly to a less extent, by rate of growth as judged by observation. More rapid improvement may be expected when selection is based on actual performance. In Denmark a system of testing breeding animals is in operation which makes prolificacy and a progeny test of the rate of growth, feed required per unit of gain, and the quality of the carcass produced, the basis of selection. Such a plan was tried in a small way in Iowa last year.

Recessive defects of various kinds may be carried by breeding animals without showing in the animals themselves. These crop out in herds from time to time when two individuals carrying such recessive factors happen to be mated together. One type of hernia is known to be inherited in this way. The ridgeling or cryptorchid condition of animals is perhaps determined by another character of similar nature. A high-stepping or string-halt condition in pigs which interferes with their well-being, is likewise inherited. Blind teats or inverted nipples and a tendency

to develop the malady commonly known as piles, are probably also matters of inheritance. Testing prospective breeding stock for such factors and discarding the animals that are capable of propagating these or other faults, would greatly improve our swine population.

Essentials of Satisfactory Ration

Given animals capable of making rapid and efficient gains and of meeting market requirements insofar as is consistent with these qualifications, or else that are capable of producing offspring having these desirable qualities, the next problem is to feed and care for them in such a way as to enable them to make the nearest possible approach to their inherited capacities.

The essentials of a satisfactory ration may be listed as (1) an abundance of carbonaceous material; (2) a liberal supply of proteins of good quality; (3) sufficient suitable mineral matter; and (4) an ample quantity of vitamins.

Carbohydrate Feeds

Carbonaceous material, consisting of carbohydrates and fats, provide the energy utilized in animal activity and the heat required to maintain the temperature of the body. The surplus above these requirements is stored in the body in the form of fat. The grains and their by-products are rich in carbohydrates and are usually relatively low in price, so that in the vast majority of cases the feeding question is one of properly supplementing these rather than one of finding an economical source of carbohydrates.

Corn is commonly used as the standard with which to compare other carbohydrate feeds. Barley and rye are acceptable substitutes for corn. Both should be ground for swine. After grinding they are a little less valuable, pound for pound, than corn. The later tests with hominy feed showed it to have a feeding value somewhat lower than that of an equal weight of corn. It is probable that in some cases at least, white hominy feed was compared with yellow corn. For pigs not on pasture, yellow corn or hominy feed would be expected to have a higher value than

white. Ground wheat is worth about 7 per cent more than corn but seldom sells at a price which would make it an economical feed. Bakery refuse compared favorably with corn, in experiments which were conducted at the Pennsylvania Station.

Improving Tankage

Tankage is produced in greater abundance than any other protein concentrate that is commonly fed to hogs. As a single supplement to corn, or other grains, few feeds surpass it in value. Nevertheless, fall pigs sometimes fail to thrive as they should on merely corn and tankage. Investigation has shown that corn and tankage may be improved for winter or dry-lot feeding. Professor Morrison was perhaps the first to try mixing linseed meal and ground alfalfa with tankage. Since then this trio mixture has been used by a number of stations. With few exceptions it has proved to be superior to tankage alone. In three Ohio trials, including linseed meal and alfalfa meal in the ration resulted in increasing the rate of gain almost a third of a pound daily a head, or enabled the pigs to reach an average weight of 200 pounds 47 days earlier than those getting only corn and tankage. The linseed and alfalfa also saved 19.7 pounds of feed for each 100 pounds of gain produced. The proportions fed were practically one pound of linseed meal and one pound of alfalfa for every two pounds of tankage.

Skimmed milk is available on some farms at least in limited quantities. In three experiments, an average of 3.3 pounds of skimmed milk was substituted for about half the tankage in a ration of corn, tankage, salt and limestone, or calcium carbonate. The pigs receiving the milk gained .24 pound more daily per head, and with the milk reduced to a 10 per cent moisture or comparable basis, required 43 pounds less feed per 100 pounds of gain. Fed in this way at the rate of a little less than a half gallon daily per head, the skimmed milk was worth approximately one seventh as much a pound as the tankage. When used alone with grain, skimmed milk is worth about one tenth

as much per pound as tankage. A combination of milk and tankage is thus superior to either used as the only supplement. Undiluted buttermilk is similar in composition and feeding value to skimmed milk.

Cottonseed meal has been tried as a substitute for linseed meal in the trio mixture. In our own (Ohio) tests it gave good results but failed to quite equal linseed meal, particularly so far as its effect on the rate of growth was concerned. Last winter the difference in feed cost per 100 pounds of gain was only 5 cents. In Illinois and Iowa trials, cottonseed meal has given fully as good results as linseed meal. Some cottonseed meal when fed in amounts sufficient to balance corn is toxic, but no injurious effects have been observed from feeding small quantities in this way.

Minerals Beneficial

The need for minerals is one that deserves consideration. Their importance in rations composed of grains and protein feeds of plant origin is generally recognized, but the advisability of feeding additional minerals with rations containing both tankage and alfalfa has sometimes been questioned. Limestone improves a ration of corn, tankage and salt. Tankage contains approximately 15 per cent of ash, which is largely bone. In a single test last winter a combination of limestone and bone meal gave practically the same results as limestone when both were fed with corn, tankage, linseed meal and salt. Apparently additional bone is unnecessary if tankage is fed. Possibly with very small amounts of tankage the bone would prove beneficial.

Iron oxide with limestone markedly increased the rate of growth and lowered the feed requirement per unit of gain. The pigs receiving it made faster and cheaper gains than similar ones getting the trio mixture without minerals, other than salt. In another experiment corn, tankage, and the mineral mixture of salt, limestone, and iron oxide gave practically the same results as corn, the trio mixture and salt. When limestone and iron oxide were added to the latter ration, however, they were instrumental in increasing

the rate of growth .14 pound daily a head, and lowering the feed cost 37 cents for each 100 pounds of gain.

In the light of our present knowledge we would encourage the use of a mixture of salt, 1; limestone, 4—to which is added 3 pounds of iron oxide for every 100 pounds of the mixture. If plant protein feeds are used, half of the limestone should be replaced with bone meal, spent bone black, or treble superphosphate. Since minute quantities of potassium iodide have proved helpful in other rations, and since if fed to brood sows it prevents hairless pigs, it would perhaps be advisable to use iodized salt, or to include .03 of a per cent of potassium iodide in the mixture.

Fish Meal Has High Value

Fish meal should not be overlooked as a protein supplement, particularly in a section in such close proximity to the source of supply. A summary of 11 experiments at different stations shows that pigs in dry lots fed corn and fish meal gained 1.49 pounds daily per head and ate 385 pounds of feed for each 100 pounds of gain, while similar ones fed corn and tankage gained 1.37 pounds daily and ate 408 pounds of feed for each 100 pounds of gain. With corn at 84 cents per bushel and tankage at $80.00 per ton, the amount of these replaced would make the fish meal worth $86.43, or 8 per cent more than the tankage. Fish meal usually contains more ash or minerals than tankage. Its proteins are apparently also of better quality, and it possesses antirachitic properties, while tankage is deficient in this respect. An experiment is now in progress in which a simple ration of corn and fish meal is being checked against the corn, tankage, linseed meal, and alfalfa ration.

Cooking Increases Value of Soybeans

Soybeans provide a possible home grown supplement for pigs. Minerals are essential when soybeans or other protein concentrates of plant origin are fed. Soybeans are worth more for pigs on pasture than for those in dry lot and have a higher value for well grown shotes than for younger pigs. Cooking soybeans greatly increases their

feeding value. In 3 trials whole cooked soybeans were worth $1.80 more per bushel on the average than were the raw ground beans. Furthermore, the cooked bean pigs were ready for market 81 days earlier than were the raw bean pigs. Without exception cooked beans and minerals have given better results than tankage. Soft pork may be caused by feeding soybeans, especially if they are fed from weaning time on and used in sufficient quantities to balance the grain. Soybean oil meal is free from this objection and makes an excellent supplement if it is properly manufactured.

Middlings Not Always Economical

Wheat middlings are a common ingredient of swine rations. Last winter, rations consisting of corn, tankage, ground alfalfa, and minerals, together with 15 per cent of flour middlings, and 18 per cent of standard middlings, respectively, were compared with one composed of corn, the trio mixture, and minerals. For feeding in this way the flour middlings were worth only 93 per cent and the standard middlings only 85 per cent as much as an equal weight of ground corn. Often the price of middlings is such that it does not pay to feed them.

Oats May Be Fed to Advantage

Oats, although they are not an economical feed for use as a complete substitute for corn, may be fed to advantage in limited quantities. In two experiments in which an average of approximately one pound of oats to every 2.5 pounds of corn was fed, the oats were worth 97.5 per cent as much per pound as corn. The oats enabled the pigs to make both faster and cheaper gains. When fed as the only grain, oats have produced much slower gains and show a value approximately three-fourths that of an equal weight of corn. Dr. Carroll of the Illinois Station fed oats with corn in the ratios of 1 :2 1 :3 and 1 :4. The one to three ratio was more profitable than either of the others. Like any of the small grains oats should be ground for pigs,

especially if they are used in the proportion in which they are the most profitable.

Plan of Feeding

Unless corn is extremely high priced, the saving from shelling and grinding if for pigs is not sufficient to cover the cost of the operations. A suggested plan of feeding is to prepare a mixture of ground oats, 250; tankage, 45; linseed meal or cottonseed meal, 22.5; ground alfalfa or other leguminous hay, 22.5; minerals, 10, and feed this at the rate of about .9 pound daily per head to pigs under 75 pounds in weight; at the rate of about 1.25 pounds daily to pigs between 75 and 125 pounds in weight; and at the rate of 1.75 pounds daily to heavier shotes. In addition to this mixture the pigs should receive all the corn they will clean up readily twice daily. A part of the tankage may be replaced with skimmed milk or buttermilk, if one is available, or fish meal may be used to replace all of the tankage. A smaller proportion of alfalfa and minerals will probably suffice if fish meal is fed. Since it is higher in protein, a little smaller proportion of cottonseed meal than of linseed meal could be used.

Pigs consuming appreciable amounts of forage will, of course, need no ground alfalfa in the ration. Then, too, a smaller proportion of protein concentrate is required for pigs on pasture than for those in dry lot. For summer feeding, a mixture of ground oats, 30; tankage, 6; linseed meal or cottonseed meal, 3; minerals, 1, fed at the rate of .9 to 1 pound daily per head to pigs under 100 pounds in weight, and at the rate of 1.2 to 1.25 pounds daily per head to heavier shotes, and ear corn according to appetite may be used.

Forage Crops

Alfalfa and clover rank among the best forage crops for pigs. Dward Essex rape is perhaps the best swine forage that can be pastured the same season it is seeded. Sweet clover produces an abundance of growth but is not palatable to pigs; in several experiments the pigs on it have made slower gains and required more concentrates per unit of

gain than those on rape or clover. Soybean pasture is well liked, but has a rather low carrying capacity and lasts for only a relatively short time. Blue grass is a good early spring or late fall pasture, provided it is clean—not contaminated with worm eggs.

Amount of Grain for Pigs on Pasture

The amount of concentrates to feed pigs on forage is influenced by the purpose for which the pigs are being produced; by the kind of forage and its condition; by the size or age of the pigs; by the kind of concentrate ration fed; by the relative price of hogs, concentrates and forage and by the relative prices at which hogs are likely to sell if marketed early or later. Pigs being developed for breeding purposes should not receive a full feed of grain. If the forage is plentiful and of good quality, less of other feed will be required than if it is scarce or of poor quality. May or June farrowed pigs cannot be finished for the early market, even when they are full fed. Hence, with them it would probably be advisable to limit the concentrates during the summer and finish them out largely on new corn. Full feeding early-farrowed pigs for the September or October market is usually advisable. Considering both feed cost and selling prices, a plan of limiting the feed somewhat for 8 or 10 weeks and then full feeding has proved more profitable than either full or limited feeding for the entire time. For this plan to be successful it is necessary to have well-bred pigs, to have them farrowed not later than March and to keep them in a healthy condition.

Price Fluctuations

Careful breeding, skillful management and intelligent feeding are all important factors but a knowledge of market conditions, as well as the ability to take advantage of these, is also essential for the greatest possible success in hog production. Many complex problems are involved in marketing. Time will permit discussing only a few of these and those very briefly.

There is a long time movement in hog prices which is

commonly spoken of as the hog price cycle. The price shows an upward trend for a period usually ranging from one and a half to two and a half years. This is followed by a downward trend for a somewhat similar length of time. The hog price cycle is caused by the tendency of producers to over-do. There is an inclination to increase production too much when the relation of hog prices to corn prices is favorable and to cut down production too much when it is unfavorable. Determining the number of hogs to raise largely on a basis of the feed ordinarily available and making only slight increases or decreases in production because of favorable or unfavorable hog-and-corn price ratios would tend to reduce the extent of these general price swings in their direction.

Seasonal fluctuations in hog prices, which are caused largely by the supply, also exist. During the eight-year period from 1921 to 1928, inclusive, the Chicago price of light hogs was higher in September than in any other month. The average monthly prices per 100 pounds, for September, October, November and December, were $11.00, $10.06, $9.03 and $8.91, respectively. The price level gradually rose during January, February, and March; dropped during April, May, and June; and rose again during July and August. Heavy hogs were higher in March and lower in December than in any other month. They sold at a lower average price throughout the year than did the light hogs, but the difference was almost negligible in November and December. In July and August, at the other extreme, heavy hog prices were $1.00 and $1.32 lower per 100 pounds, on the average than were light hog prices.

The higher price usually paid for light hogs; the preference of the consumer for the smaller and leaner cuts obtained from animals of these weights; the increased chance of placing one's hogs on the early market; and the fact that as hogs become heavier they require more feed for each pound of gain produced, all tend to place the producer of light-weight hogs in a strongly favorable position.

Following Mr. Robison's address many questions were

asked, and the discussion showed that his hearers appreciated his valuable address.

Mr. DeWitt C. Wing of the Rural New Yorker, was next introduced by President Harvey. His wit and wisdom will be remembered by many Maryland stockmen for years to come. His address follows:

"A USEFUL PURE-BRED SWINE AND SHEEP INDUSTRY IN THE EAST"—HOGS AND SHEEP IN MARYLAND

BY DEWITT C. WING,

Editor, The Rural New-Yorker

Orderly, systematic work, done in accordance with a plan or program, is the exception and not the rule in farming. Commercial businesses conducted in the typical old way, without plan and often without bookkeeping worthy of the name, are essentially in the same position today as farms operated in the same fashion. Some farmers are sufficiently strong financially to afford the luxury of ignoring cost accounts and of farming according to their moods and fancies. All other farmers, however, eventually will be compelled to budget and plan their year's work in order to survive in the increasingly fierce struggle with which competition and nature test the abilities and qualities of men.

In agriculture we cannot afford to ignore the principles whereby manufacturing industries grow and maintain themselves. Some of these principles are applicable to our business, for, whether we like it or not, farming has come to be a kind of business as well as a way of life. We are under the necessity of improving our practices from a business point of view. We have got to be better businessmen or fail, and drift unprepared into other vocations. Government action and organized action on our part may in time enable us to obtain more equitable conditions under which to market our products, so that we can get a fair share of the consumer's dollar; but nothing short of a miracle will ever make it possible for us to succeed or

survive in our business unless we employ business methods. No one is more hostile, in his heart, than I am to the truth and implication of this cold, heartless proposition.

In the good, old days, our toilsome conquests of nature were sweetened and savored by hours and seasons of freedom and leisure in isolation, where we could live pretty much as we pleased, without keeping accounts or harnessing ourselves with a system. Every farmer in my father's day was a king; today every man is a slave of our economic system, whether he be high up or low down in it. We cannot free ourselves from it unless we migrate to backward countries. Fortunately, we can adjust ourselves to the new age, and thereby salvage some of the old values and realize some new ones that are good. Everyone of us is in the position of a mule plodding along ahead of a steam roller. He can, if he will, move faster than the machine; if he doesn't, neither kicking nor lying down can save him. There are plenty of mules amongst us who would rather be flattened out and fatally deflated than adjust their speed to a machine at their heels. I admire their point of view, but it doesn't help them to survive in the business of going their own way. There is no getting off the road, any more than one can get out of the boat that all of us are in. There is no escape from competition. Co-operation within a given group doesn't eliminate competition; it may modify it temporarily. We are passing from an old to a new form of competition, which is collective and impersonal. Organized groups are in competition with one another.

One fact that is as obvious to me as a flagpole is that those men who lead in business, trades and professions are orderly and systematic in their private and occupational lives. They have learned how to do their work, how to save time, how to use their leisure, how to make the most of their opportunities, how to think in terms of net results, how to control and not be driven by their work, and how to live effectively and keenly. They think and plan ahead. They have a policy or course by which they are guided. On the basis of facts, suggestions and study, they reach certain conclusions which they translate into action or cast aside as being unsound. We shall be forced to adopt this

way of business in farming. It will increase our net returns and our leisure. It will heighten our interest in life, and broaden our horizons. For the race that every man must run, whether he likes it or not, he is obliged to keep himself in a mental and physical condition that will produce the most action with the least friction and lost motion.

All this leads me to the suggestion that whoever is interested in raising hogs or sheep or both in Maryland will not be fair to himself and to his animals if he does not work out and adopt an orderly program of action, and follow it systematically and thoughtfully. Any program will sometimes break down, in part, or require to be changed in response to unexpected conditions, but in every instance any program is far better than none. An orderly procedure is the fruit of an ordered mind and a self-controlled character. If we do not think out a plan for ourselves, we are at the mercy of every salesman who comes along. We become the victims of our own incapacities. In every walk of life, there are countless illustrations of failure, wreck and tragedy due to our inability to master and direct the marvelously organized machinery that we call ourselves.

What are Maryland's human resources in relation to the business of raising more livestock and more efficient hogs and sheep? Is Maryland ready for a considerable and steady expansion and development of its hog and sheep industry? Have Maryland farmers who are interested in this subject personally considered the facts and conditions on which to base a program, adapted to their own farms and surroundings? Are they thinking themselves into a new farm enterprise or are they being argued and led into it? Thinking and reasoning are primary aids to sound action in business. Let's use them for what they are worth.

Our forefathers learned how to do things by doing them. If we don't know how to raise sheep and hogs, how can we know that hired men are doing the job well for us? A sound enterprise on a farm means that the man engaged in it knows how to conduct it himself. If he knows his own business, he will know how to train his sons and labor to aid him. The most successful—perhaps the only success-

ful—farmers in years to come will be those who know their business and do it themselves. Only the rich hobbyist in farming can afford to hire a manager, and many a manager doesn't know much more than his employer about practical farming. Blind leaders will always have blind followers. If a farmer cannot do his own job well, and control his own business, he will eventually be out of a job and have no business. "Chain farms" may come, in some areas, but every farmer whose manhood and self respect have not deserted him will go down to the last ditch before he will join a chain gang in farming.

My vague impressions of Maryland are quite different from your clear knowledge of it. What you know about the State and what I think about it might, if reduced to lines. be at right angles to each other. What a man knows about himself is highly important in relation to anything that he essays to do. If he is frankly honest with himself, he will not engage in any new farm enterprise on a large scale until little by little and step by step he learns how to conduct it himself. He will not plunge or jump into it; he will grow into it. That is the only safe and sound way for any man who depends wholly upon his farm for his income. If he imagines that he would like to raise sheep or hogs, and has arrived at the conclusions, based on a personal study of facts and conditions, that there is a place for either or both in the business management of his farm, then he can afford to invest in a few purebreds for the foundation of his flock or herd. Purebreds are much better investments at current prices than they used to be. If he knows how to raise grades at a profit, he can learn how to make good purebreds pay higher net returns than his grades.

The head of any farm family in which there are boys and girls, owes his children a chance with lambs, pigs, calves and poultry, if the farm is located where any of these classes of livestock can be raised at a profit. Many a 4-H club boy 12 to 17 years of age knows much more about feeding and handling a calf, lamb, pig, or foal than his father knows. A farmer's boys and girls are his best ex-

cuses for raising more and better livestock, if the work can be made to pay its way.

It is for Maryland farm people to decide for themselves whether they will improve and extend their flocks of sheep and herds of hogs. I do not know what their experience, habits, farming systems and traditions are, but I do know that these are factors to be considered by those who would begin raising either hogs or sheep. In discussing my subject, I think of human resources at the outset, for man is the key-factor in every enterprise. What proportion of Maryland's farm population is prepared by training, inclination and capital to broaden and deepen the hog and sheep industry in the State? Are Maryland's natural resources adapted to sheep and hogs? Under this heading I think of climate, location, soil fertility, the "lay of the land" and shade of trees. Every farmer will think of these factors with special reference to his own farm.

Next, I think of what may be termed artificial resources. These include pastures, crops and feeds, fertilizers, water supply, roads, markets, building equipment, fences, machinery, veterinary service, county agents, university extension workers, books, bulletins and possibly a farm journal. Some of these are essential to success with sheep or hogs. Good bluegrass and legume pastures and a variety of crops adapted to sheep and hogs, and plenty of clean fresh water, cannot be too strongly emphasized as the foundation of a set-up for a herd or flock.

Elaborate building equipment is never necessary. It is a form of overhead that in thousands of instances has prevented stockmen from prospering or remaining in business. Too much livestock everywhere spends too much time indoors eating inferior hay and growing flabby. With pastures worthy of purebred stock, all classes of animals would be better off if they spent most of their time outdoors. Hog wallows are demanded by all the "language" that a hog can "speak" and by all the signs that the hog's hide and behavior exhibit.

Rape is a favorite succulent for sheep and hogs, too. It is high in protein. Alfalfa, clover, sweet clover and soybeans are some of the legumes needed on every stock-farm.

English shepherds value root crops very highly for sheep. American shepherds, however, who use an abundance of legume roughage, good corn silage and green forage do not need roots in order to succeed with sheep.

Intensive work with sheep or hogs will almost always yield better results than extensive work on a large scale. Consequently the man who knows his business, conducts it himself on his own farm, and maintains his herd or flock on a scale which harmonizes with his resources, conditions and capacities, is likely to make it pay. He is the kind of man who will not invest a lot of money in equipment. A group of expensive buildings is a dilapidated monument to vanity and extravagance after its owner dies or after the livestock enterprise which it was designed to protect and foster has had its day or ceased to be profitable.

Some of the best dent corn that I have ever seen was grown in Maryland. Pigs could be raised and made to weigh 120 to 150 pounds without feeding them much corn. It is probable that Maryland corn will yield the producer a good return if intelligently utilized in the production of pork, mutton or beef. Every farmer's job is to use the most efficient animal units in converting his home-grown or other feeds into marketable products for which there is the largest and most stable demand in consuming centers within his shipping zone. Every producer of human foods is in competition with every other producer in this country, and with many foreigner producers, for, despite the tariff wall, millions of dollars' worth of edibles annually consumed in the United States are produced abroad. If the tariff puts an occasional dollar in the farmer's pocket, it takes that much or more out at the same time.

Maryland farmers desire to engage in or maintain farm enterprises which can be fed largely with home-grown feeds and forage. An animal enterprise on a farm is not on a sound basis unless it is a fixed part of a farming system or program. Specialized dairymen buy practically all of their feed. The most successful dairymen grow some of their feed, maintain good pastures, and manage several farm enterprises that can be carried along with dairying.

Under what we may call practical procedure on the part

of Maryland farmers entering the ranks of producers of sheep or hogs, I think of such items as breed selection, the quality of the individuals selected, cross-breeding, health and vitality, business methods, specialization and diversification, selling for slaughter or for breeding, marketing on foot or dressed, and co-operative relations with neighbors. The breeds now popular or leading in Maryland are by that token the best for most Maryland farmers to adopt, if they desire to raise hogs or sheep. There is often as much difference between animals of the same breed as between those of different breeds. More mistakes are made in selecting individuals than in selecting breeds. Purebrel flocks and herds, however, have been culled somewhat freely in recent years, with the result that animals sold from them are in most cases not only desirable individuals but healthy, and dependable for breeding purposes.

On general principles, it is always more satisfactory to purchase breeding stock from a neighbor in one's County or State than from a distant source. If we ever grow up to be men instead of children, we shall junk the old sayings that "distance lends enchantment" and "familiarity breeds contempt." "Sending off" and far away for merchandise, breeding stock and farm seeds and plants is a practice that today ought to convict men in Maryland of lunacy. I cannot refrain from making this statement definite and positive, because a long time ago I "sent off" for a mail order watch that cost me $9.98, and wasn't worth carrying home. No local jeweler would have carried so unreliable and gaudy a timepiece in his stock. It was a big, heavy watch with a reindeer etched on its back. When I was a boy, farmers didn't need clocks or watches; they always knew what the time was by the position of the sun, and when the sun didn't shine it didn't make any difference to them what the time was.

Not many years ago it was a species of treason to suggest the cross-breeding of purebreds. Now that purebreds exist in comparatively large numbers in many States, and are going in a considerable volume to the shambles every year, where the culls of all purebreds herds and flocks belong, the crossing of purebreds is not only discussed but

practiced by many producers of hogs and sheep. In Maryland, for example, Merino ewes are bred to Dorset rams for the production of so-called "Easter lambs." Perhaps there is some crossing also amongst some breeds of hogs. In Denmark purebred sows of one breed are bred to purebred boars of a different breed. The progeny are better market hogs than those of either of the parent breeds.

Some of the thriftiest and most rapid-growing pigs that I have ever seen were out of a large Yorkshire sow bred to a Chester White boar. A litter that equaled them was out of a Tamworth sow bred to a Duroc-Jersey boar. On my own farm in Illinois, our best crossbreds have resulted from breeding Duroc-Jersey sows to Poland-China boars. In cross-breeding, one special object is to have the young born of milky, motherly dams. Since our purebred livestock industry is now, for the first time, largely on a practical farm basis, farmers who raise sheep, hogs or beef cattle would do well to consider the economic advantages arising from the crossing of certain breeds for meat-making. Cross-breeding has long been practiced in England.

Farmers in a given county can help one another and create a regional or national market for their purebreds by raising the same breed, collectively buying the best sires obtainable, and advertising and selling through a co-operative organization. Wisconsin put itself on the map as a source of dairy cattle by adopting this procedure. If slaughter stock of the best quality is to be produced, a community program is equally effective; located as Maryland is, it might be extended until it was State-wide.

Among the hazards with which breeders of sheep and hogs in Maryland or elsewhere are likely to deal, are diseases and parasites, dogs and poisonous plants. I assume that Maryland sheep breeders enjoy some measure of protection under a dog law. Garbage feeding causes the death of a large percentage of hogs every year in the east. Dr. I. K. Atherton declares that it is the chief source of cholera infection in Maryland. Recently Dr. V. A. Moore of the veterinary department at Cornell University said to me that some years ago when the death rate among garbage-fed hogs in certain regions of New York State was high,

his post-mortems showed that they did not die of cholera, as was supposed, but of poisoning by strongly alkaline soap. Doctors often disagree with each other. Maybe those here mentioned are both right.

Several hog breeders in the Boston zone of Massachusetts are feeding garbage to their breeding herds, numbering 50 to 800 head per herd, which have been maintained for several years. Pigs from these herds are shipped in crates, accommodating one pig or three head, weighing 14 to 30 pounds each, into all of the eastern States, and as far west as Ohio and Indiana. Apparently the breeders and dealers have solved the problem of feeding garbage without infecting their hogs with cholera.

Worms or internal parasites occasion a greater annual loss than hog cholera in the cornbelt. Many leading producers in that belt employ the McLean County System of Swine Sanitation, and declare that it is profitable for them to do so. It involves considerable tedious work. The principles of sanitation which it embodies are always and everywhere applicable, and can be recommended to every hog breeder. The system as a whole, however, is not likely to be adopted by the general run of farmers anywhere, because it calls for so much petty hand work that, without giving it a trial, they condemn it as being impracticable for them.

Producers of and dealers in virus and serum, and most veterinarians say that, due to vaccination, hog cholera is now under control. Many hog breeders concur in that view. Some others don't. It is pertinent to add that with the increase in the use of the double-treatment, there has been a large annual loss of hogs from so-called new diseases for which pathologists have not found satisfactory names. A long-time program of research and investigation in the field of animal diseases ought to be adopted and adequately financed. Animal breeders spend enough money every year for worthless "remedies," "cures" and "preventives" to endow this kind of work.

Poisonous plants are not numerous in the east. Laurel, I believe, is poisonous to sheep. Thieves in autos steal pigs in some cornbelt regions. It is worth while in many com-

munities for farmers to carry insurance on all of their livestock and other property for which it can be bought at a fair price.

Without prejudice or partiality, I give it as my opinion that more beginners will succeed or do fairly well with hogs than with sheep. Shepherding is a more difficult art than swineherding. Sheep are more highly organized, less hardy and have more parasites than hogs. Like hogs, however, they are in too many cases neglected or treated as if they were scavengers. Both respond and thrive best when given an abundance of a variety of clean feed of good quality, plenty of fresh, pure water, uncontaminated grazing areas, and sanitary, well-ventilated quarters in which to sleep, farrow and yean in cold, wet weather.

Sheep require more attention and skill on the part of their caretaker than most farm flocks receive. The older books on sheep husbandry, written by practical, experienced shepherds, are more helpful than most new books to beginners with sheep. A 100 per cent lamb crop is above the yearly average in farm flocks. Many a ewe not only doesn't raise twins, but, under inexperienced care, may botch the job of raising a single.

For choice, well-bred spring lambs, docked, castrated and rapidly fattened and finished, prices at eastern markets are likely to remain attractive for years to eastern producers who know how to handle their flocks. Qualitied fat wethers also are in demand at fair to good prices at these markets, while for good eastern purebreds for breeding purposes the demand in the eastern States is growing, and can be greatly expanded in the next ten years. Sheep-raising is a neglected enterprise in this part of the country.

Wool is of less commercial importance than it was a dozen years ago as an international fiber crop, because cotton and fabricated substitutes for wool are cheaper and enormously popular in the United States.

Since sows may farrow twice a year, and since growth in weaned pigs can be cheaply and rapidly produced with home-grown feeds and herbage, it is obvious that as money-makers hogs occupy a strong position in the economy of agriculture. Under good farm conditions, hogs that are

well-fed are probably healthier and less bother than any other class of livestock. At home and to a large extent in several foreign countries, the enormous demand for American hog products is established and dependable.

Baltimore is said to be a satisfactory market for Maryland livestock. Regular producers, however, in some regions might obtain better net results for choice dressed lambs and light-weight hogs than for the same animals sold on foot, if they had a co-operative marketing system of their own.

Dr. I. K. Atherton, Inspector in Charge of Hog Cholera Work and Farm Sanitation, College Park, was next presented by President Harvey. He delivered a meaty, interesting report of Maryland's 1928 hog cholera experience.

HOG CHOLERA RESULTS IN MARYLAND IN 1928

By I. K. Atherton, V. S.,

Inspector in Charge of Hog Cholera Work and Farm Sanitation, College Park, Maryland

The most pleasurable event of the year in the hog cholera work is the meeting with the Maryland Swine Growers' Association. The Sheep Growers' Association is composed of a bunch of good fellows, and we do not believe the pleasure will be lessened in the least by having them with us. Moreover, the pleasure is doubled when the meeting is held at the Claremont Hotel at the Baltimore Stock Yards.

The Maryland Swine Growers' Association is the only organization that annually receives a report of the hog cholera work in the State in which it is located. In fact, Maryland is the only State in which the officials collect and compile the data on practically all outbreaks of hog cholera which occur within its borders.

On first glance it is evident that the report for 1928 is not just what we would like to make. A larger number of outbreaks of the disease were recorded than for any one year since the hog cholera work was inaugurated in the State. However, as we stated in a previous address, an

outbreak of cholera is worth while if the history is obtained and those interested will profit by it. It will be noted later that the losses from hog cholera during the year were due to the fact that the principles of the Maryland Plan for the Prevention of Hog Cholera were ignored.

For the first seven months of the year conditions were all that could be desired. In fact, the number of outbreaks reported was under a nine-year average for that period. In August, like a clap of thunder from a clear sky, the outbreaks of cholera began to increase in what appeared at that time to be a rather mystifying manner. Early in September, however, reports of extensive outbreaks of the disease in the Corn Belt States began to trickle in. In fact, they had assumed such proportions that a shortage of anti-hog-cholera serum was threatened. This accounted for the increase of cholera in Maryland. It is a matter of record that whenever there is an extensive outbreak of cholera experienced in the Corn Belt there is always an increased amount of the disease in Maryland. This is due to infected pork which enters the channels of trade, the trimmings from which reach the hogs via the swill pail.

For the year 1928, nine hundred thirty-eight outbreaks of hog cholera were reported against 650 in 1927 and a nine-year annual average of 549 outbreaks. This was an increase of 70 per cent over a nine-year average. Of the 938 cases of cholera reported, 560 were of the backyard type, that is, a few hogs kept in small pens and fed on concentrates, including table scraps from private homes, etc. Three hun dred seventy-eight occurred on farms where hogs are bred and raised. This is approximately 1.4 per cent of all such farms in Maryland. However, garbage-feeding plants were maintained on 26 of these farms. It might be added that 92 of the total outbreaks reported in 1928 were among hogs in garbage-feeding plants of various proportions.

Four hundred ten, or 44 per cent, of the outbreaks involved only five hogs or less. In 154 cases there were only 2 hogs, while in 38 instances only 1 hog was involved.

Eight hundred ninety-one of the outbreaks reported were primary or new centers of the disease. Forty-seven, or only 5 per cent, were secondary or due to the spread of the in-

fection from nearby cases of the disease. However, in every instance the secondary case developed before or within 10 days after the original outbreak was reported, which demonstrated, as is the case each year, that the infection is practically always spread before the primary outbreak was reported.

Of the eight hundred ninety-one primary outbreaks, 825 were due to the feeding of the bones, rinds, or scraps of infected pork, or the water in which such product had been washed, in garbage, table scraps, kitchen swill, etc. Twenty-nine were due to the purchase of infected stock. In this connection it might be stated that some farmers in parts of Maryland adjoining West Virginia went into the infected area in that State and purchased hogs with the full knowledge that hog cholera was raging in the locality. Four of the cases which were diagnosed as hog cholera were due to the administration of the double treatment. Seven cases were due to hogs obtaining carcasses that had died of the disease. In a number of these cases the carcasses of hogs that had died of the disease were left on the place by retiring tenants. In one instance a farmer in a neighboring State threw carcasses across the line where hogs could get them, and in two instance carcasses of hogs that had died in backyard cases in town were hauled out and thrown in fields where hogs were confined. This, of course, was nothing but infected pork in a different form. In 24 cases no history was obtained on which to base the source of infection.

Of the 47 secondary outbreaks or spread of the infection, 37 were due to permitting hogs to run at large, to line fences, or to the movement of such animals for various purposes Three were apparently due to unburied carcasses of hogs that had died of the disease. Two were apparently due to drainage from nearby pens, while in five cases no history was obtained on which to base the source of infection.

Attention is respectfully called to the following table which gives the outbreaks by Counties compared with a nine-year average and the percentage of the hogs in the State.

Column No. 1 gives the percentage of hogs in the State.

Column No. 2 gives the nine-year average of outbreaks in the County.

Column No. 3 gives the outbreaks reported in the County during 1928.

County	No. 1	No. 2	No. 3
Anne Arundel	3.	25.8	50
Allegany	1.5	6.1	4
Baltimore	7.	22.4	18
Calvert	1.6	6.3	12
Caroline	2.7	7.9	37
Carroll	11.5	13.6	20
Cecil	3.9	23.	21
Charles	3.4	13.	9
Dorchester	2.2	35.2	75
Frederick	11.3	30.1	44
Garrett	2.	.2	0
Harford	5.2	13.7	19
Howard	4.	9.4	26
Kent	2.6	32.	41
Montgomery	7.1	26.6	51
Prince George's	4.5	27.1	42
Queen Anne	4.2	15.1	57
St. Mary's	3.3	18.1	17
Somerset	1.8	28.9	56
Talbot	2.9	30.2	74
Washington	10.	75.8	154
Wicomico	1.6	36.1	53
Worcester	2.5	52.8	58
Total		549.4	938

Eight hundred thirty-nine questionnaires covering outbreaks of hog cholera for the year have been returned. This is, without doubt, a sufficient number on which to make a close estimate of the swine lost. Data obtained from these questionaires show that on an average seven hogs per outbreak were lost. This would make the losses for the 938 cases 6,566 hogs. While it is believed that over 90 per cent of all cases come to the attention of the authorities yet an additional 20 per cent is added to the losses recorded in order that conservatism might be claimed in our reports. Twenty per cent of 6,566 animals would be 1,313 hogs which would make a total of 7,879 hogs lost for the year.

We believe that a short review of the information derived from these questionnaires will be interesting. This shows that in approximately only 60 per cent of the cases were

the hogs vaccinated. In 529 herds to which the serum was administered and on which reports were received, 4,004 or 35 per cent of the swine were sick or dead before the serum was administered. In 310 herds, in which there were 1,896 hogs, no serum was administered, and of these 1,854 were lost.

It must be admitted that a large number of hogs were unnecessarily lost even after the hogs were permitted, through carelessness, to contract the disease. Approximately only 10 per cent of the hogs were sick when the disease was first noticed. Of the animals that were apparently well when the hogs were treated 90 per cent were saved. This shows that if the hogs had been properly and promptly vaccinated on the appearance of the disease 6,380 animals could have been saved, and the losses reduced from 7,879 to approximately 1,500.

During the year, 162 permits were issued for the administration of the double treatment. One hundred fifty-five of these were used, and in one instance the treatment was administered without a permit. These one hundred fifty-five permits covered 107 places, and in 97 instances they were for hogs in garbage-feeding plants. Owing to the large amount of work which the members of the hog cholera force were compelled to do in the fall it was impossible to investigate all cases where the double treatment was used. However, reports were received covering 64 herds where the treatment was used which showed that in 9 instances, or 14 per cent of the cases, hogs were lost as a result of the administration of the serum and virus. Owing to the fact that veterinarians differ regarding these losses and that official veterinarians did not get to make a diagnosis in each case, and frequently months elapsed before the reports were received, they were not recorded as cases of hog cholera.

While 1928 was disappointing so far as the number of cases of hog cholera reported is concerned, it is interesting that the swine growers in the State of Maryland heard nothing of the alleged new diseases of swine which are becoming a menace to the swine industry in other parts of the country. We refer to conditions known as hog "flu,"

infectious enteritis, infectious pneumonia, mixed infection, haemorrhagic septicemia, etc.

In regard to these alleged new diseases, the Committee on Swine Diseases of the U. S. Live Stock Sanitary Association held in Chicago in December, 1928, made this statement, "hog cholera is of no less importance, but other diseases of swine are assuming greater importance." The committee ranked necrotic enteritis higher in importance than hog cholera. Dr. Murry, of the Iowa Agricultural College, who delivered an address at the meeting noted, under the title "Infectious Enteritis," stated that that disease caused more losses in Iowa during 1928 than did hog cholera.

From reports received it is evident that these alleged new diseases of swine are proving a menace to the swine industry in those localities where the double treatment has been extensively and continuously used since it was developed.

If you were to ask a hog raiser in the Corn Belt States where these new diseases came from he would tell you that they were brought in by hogs purchased during the war from various sections of the country for stocker purposes. The officials of these States, however, will inform you that hogs were not obtained from any localities during the war except where they had been purchased before and since that great conflict.

Hog cholera virus is not a sterile product. In fact, efforts to sterilize it dare not be made, for to do so would lower its virulency. It is definitely known that one germ, the *baccillus suipestifer,* which was at one time supposed to be the "bug" which caused hog cholera, is transmitted by hog cholera virus. It is a matter of record that the hog cholera virus has become so heavily contaminated with it that the virus must be phenolized to kill off these germs even at the risk of weakening the virus before it can be used in hyper-immunizing hogs in serum plants.

In a recent address on "Hog Cholera With Special Reference to Differential Diagnosis," one of the foremost pathologists of the veterinary profession in the United States made a statement to the effect that apparently healthy

animals may be carriers of the infection of these alleged new diseases.

As we have definite knowledge that at least one germ is disseminated in hog cholera virus are we not justified in assuming, when apparently healthy animals are carriers of the infection of these alleged new diseases of swine, that these diseases may also be transmitted in hog cholera virus obtained from their bodies?

In a year like 1928 we always have persons come forward suggesting the double treatment as the solution of the hog cholera problem. To adopt the double treatment as a solution of the hog cholera problem in Maryland would be like purchasing a two-cylinder automobile at the present stage in the development of automotive transportation.

In a bulletin on hog cholera recently issued by the U. S. Bureau of Animal Industry, the following statement is made, "permanent reductions in losses from cholera can be expected only when farmers organize in a determined effort consisting principally of self-imposed quarantine, the continuous observance of sanitary precautions, and the early use of the serum treatment should the herd become infected or dangerously exposed."

If this statement be true, then, in view of the foregoing, how can the double treatment be offered as the solution of the hog cholera problem? In fact, a noted author on veterinary subjects is responsible for the statement: "To say the least, the use of the simultaneous method is contrary to good sanitation."

As was noted before, in 1928 swine were lost as a result of the use of the double treatment in 14 per cent of the herds in which it was administered. Undoubtedly, all of these losses were really due to hog cholera. In Maryland there are 30,000 farms, at least, on which hogs are bred and raised. If the swine on all of these farms were double-treated and the same proportion of "breaks" occurred, as was experienced in the instances where the double treatment was used in the State in 1928, it would mean that we would have hog cholera on 4,200 farms in the State as a result of the use of a method which some persons claim would be the solution of the problem. Even though a large

number of farmers in Maryland did not observe the principles of the Maryland Plan for the Prevention of Hog Cholera, that disease was experienced on only 378 farms, 26 of which were garbage-feeding plants. In other words, the double-treating of all hogs on farms where hogs are bred and raised would have increased hog cholera among swine, on farms alone, over 1000 per cent. Summing it all up, it becomes more and more apparent that the Maryland Plan for the Prevention of Hog Cholera is the only solution of the hog cholera problem. There is no short nor "Royal Road" to protection from the disease.

Professor K. A. Clark, Secretary of the Maryland Sheep Growers' Association, was called upon by President Harvey to present a brief statement concerning the proposed consolidation of the Maryland Swine Growers' Association and the Maryland Sheep Growers' Association on a basis that would include these and other livestock interests.

Mr. Clark referred to the action of the Presidents of the two Associations in appointing members to serve on a joint committee to consider the proposal of effecting a consolidation of the Sheep and Swine Associations; told of the meeting of this committee at the time of the Timonium Fair, at which time the sentiment seemed favorable to the consolidation; reported the action taken by the Sheep Growers' Association earlier in the day, and presented the following resolution, which was unanimously adopted after some discussion:

WHEREAS, It appears that the best interests of the livestock industry of Maryland in its various branches would be better served by a stronger single State organization than by the different smaller associations as at present, and

WHEREAS, Action looking toward such consolidation was taken by the Maryland Sheep Growers' Association in their Annual Meeting this morning, therefore be it

Resolved: That it is the sense of this joint meeting that

such consolidation should be effected and that the Chairman of this meeting should be instructed to appoint a committee of seven members made up of three officers of the Maryland Sheep Growers' Association, three officers of the Maryland Swine Growers' Association and one other person to represent other livestock interests, said committee to be empowered to effect the proposed consolidation and to provide for the carrying on of the new organization's activities until such time as a regular meeting of the new organization shall be held.

The committee named by Mr. W. R. Harvey, who presided at the joint meeting, to effect the proposed consolidation and plan for the coming year's activities is as follows:

Mr. Humphrey D. Wolfe, Glenwood, Pres. Maryland Sheep Growers' Association.

Mr. J. W. Jones, Olney, Chairman of the Annual Beef Cattle Conference.

Mr. W. R. Harvey, Corbett, Pres. Maryland Swine Growers' Association.

Mr. Edgar L. Thomas, Frederick, Vice-Pres. Maryland Sheep Growers' Association.

Mr. D. B. McDowell, Nottingham, Pa., Vice-Pres. Maryland Swine Growers' Association.

Mr. K. A. Clark, College Park, Sec'y. Maryland Sheep Growers' Association.

Mr. B. E. Carmichael, College Park, Sec'y. Maryland Swine Growers' Association.

The Maryland 1928 Litter Contest

The following tabulation shows the details concerning litters entered in the 1928 Maryland 150-day 1500-pound Litter Contest, the results with the four successful entries, and, for comparison, the results of the three earlier Contests.

1928 LITTER CONTEST ENTRIES

NAME	COUNTY	BREED	PIGS IN LITTER	DATE FARROWED
Stanley P. Stabler	Montgomery	Duroc-Jersey	10	March 3
Stanley P. Stabler	Montgomery	Duroc-Jersey	9	March 4
Mrs. J. W. Bigelow	Talbot	Gr. D. J. x Gr. P. C.	7	April 9
G. Carlton Oland	Montgomery	Duroc-Jersey	13	March 18
J. S. & E. T. Cullen	Cecil	Poland-China	10	March 8
Hewitt Nichols	Howard	D. J. x P. C.	10	April 5
Wm. F. Howeth, Jr.	Talbot	D. J. x Chester-White	7	March 20
O. E. Yerkey	Kent	P. C. x (P. C. x D. J.)	10	April 20
Mack Bowman	Montgomery	Duroc-Jersey	11	April 1
Everette Jones	Montgomery	Duroc-Jersey	10	April 12
Charles Hines	Montgomery	Duroc-Jersey	10	March 5
Joseph Fyffe	Montgomery	Duroc-Jersey	11	April 3
McDonogh School	Baltimore	Duroc-Jersey	11	March 16
E. Earl Remsberg	Frederick	P. C. x D. J.	8	March 27
E. Earl Remsberg	Frederick	P. C. x D. J.	10	March 26
Aubrey Walters	Montgomery	Berkshire	11	May 27

1928 LITTER CONTEST; RESULTS WITH SUCCESSFUL LITTERS

NAME	COUNTY	BREED	PIGS IN LITTER	WT. AT 150 DAYS	AV. WT. PER. PIG
Stanley P. Stabler	Montgomery	Duroc-Jersey	10	1795*	——
				1783**	178.3
E. Earl Remsberg	Frederick	P. C. x D. J.	10	1734	173.4
McDonogh School	Baltimore	Duroc-Jersey	11	1665	151.4
Stanley P. Stabler	Montgomery	Duroc-Jersey	9	1611	179.0

*Weight in 151 days. **Calculated weight at 150 days.

PREVIOUS YEARS' WINNERS

YEAR	NAME	NO. OF PIGS	AGE DAYS	WT. LBS.
1925	Charles F. Hines	9	150	1612.5
1926	G. Carlton Oland	12	150	2423
1927	G. Carlton Oland	10	150	2093

President W. R. Harvey called upon Mr. Stanley P. Stabler, of Montgomery County, to come forward. In a few well-chosen words President Harvey gave to Mr. Stabler the custody, for one year, of the beautiful silver cup offered by the Maryland Agricultural Society-The Maryland Farm Bureau Federation to the owner of the winning litter in the Maryland Litter Contest. Mr. Stabler then presented the following report of his work with two litters, each of which exceeded 1500 pounds in weight at 150 days of age:

HOW I PRODUCED TWO 150-DAY 1500-POUND LITTERS

BY STANLEY P. STABLER, Montgomery County

Mr. Chairman:

It is certainly a pleasure to be here this evening, and to receive this cup. It has been my ambition ever since this contest was started to win this cup, but until this year I have been unsuccessful. This year, however, I succeeded in having two litters reach the required weight.

These litters were both purebred Duroc-Jersey and were farrowed on the third and fourth of March. The dams were litter mates and were bred to the same boar, so that the breeding of the two litters was exactly the same. The litters were fed together, and joint feed records were kept. There were 10 pigs in one litter and 9 in the other.

At the age of 150 days the weights of the litters were as follows:

Litter of 10	1783 pounds	average 178.3 pounds
Litter of 9	1611 pounds	average 179.0 pounds

The average gain per head per day from time of birth was 1.19 pounds.

Both the sows and pigs were fed entirely on dry feed, that is, they received no feed in the form of slop. They had all the fresh water they wanted and the feed was given in the dry form. When the pigs were a few days old the sows were put on a self-feeder containing a mixture of wheat bran and wheat middlings and also a mixture of meat meal and oil meal. Enough car corn was fed to keep the sows from losing very much flesh.

The sows and pigs were on blue grass pasture until the last of April. They were then moved to a young oat pasture until the middle of July when they were put in a hay field which had some second growth alfalfa.

When the pigs were about two weeks old they started eating a little rolled oats and shelled corn in a creep. They also received a little skim milk, but the supply of milk was very small and it served mainly as an appetizer.

The pigs were weaned when they were 10 weeks old. After weaning they were fed a variety of feeds, the kind of feed chosen depending upon its relative price. Immediately after weaning they were fed chiefly on shelled corn and wheat middlings. They were then changed to corn feed meal and a ready-mixed hog feed containing about 18 per cent protein. For the last two months they were self-fed shelled corn and a protein supplement consisting of equal parts of meat meal and oil meal. I think this last ration was probably the most economical and satisfactory.

The cost of the feed for the sows and pigs from the time the pigs were born until they were 150 days old was $280.81. The weight of the 19 pigs at this age was 3394 pounds, giving a cost of gain of about 8.3 cents per pound. If the hogs had been sold at this time for the market price of 12 cents they would have given a profit of $126.49.

I did not sell the hogs at this time, however, but kept them and exhibited them at the Rockville Fair. They were taken to Washington Stock Yards immediately after the Fair when they were 175 days old. The returns were as follows:

19 hogs weighing 4,150 lbs. @ 12¾c	$529.13
Premiums at Rockville	49.00
Total receipts	$578.13
Total cost of feed and hauling	368.12
Net profit	$201.01

Although these profits are not as great as some made in previous years, it must be remembered that 1928 was a poor hog year and that feed was very expensive.

In my opinion one of the most commendable features of this contest is that hogs fed for the contest make rapid gains and are thus ready for the high August and September market. This is often the difference between success and failure, as the market often drops from 2 cents to 4 cents after the first of October. On these two litters a price drop of 2½ cents would have amounted to over $100. Such a drop would have cut in heavily on the profits. The hog man must consider this when he attempts to grow pigs on light rations.

I wish to commend the Association again for sponsoring this contest and to thank them for this beautiful cup. You will note that this is the fourth time this cup has come to Montgomery County and that each time it has been won by a member of Olney Pig Club. I think that our success is due largely to advice and encouragement which we have received from our local leader, Mr. J. W. Jones, and to the fact that we have followed good sanitary methods of feeding and management.

Montgomery County is going after this cup again next year and she issues a challenge to any other County to try to beat her. (Applause.)

Mr. E. Earl Remsberg, of Frederick County, owner of the litter which won second place in the 1928 Litter Contest, told of his methods in bringing a litter of 10 pigs to a weight of 1734 pounds at 150 days of age. Mr. Remsberg stated that the Maryland Litter Contest is both interesting and valuable to participants and expressed the hope that it may become more generally recognized as an active factor in increasing the efficiency of pork production in Maryland.

During the evening motion pictures depicting the activities incident to cattle raising in the western range country were shown. These films were made available through the courtesy of the O. M. Franklin Blackleg Serum Company, Denver, Colorado. The scenes shown were highly realistic and elicited much praise from those who were so fortunate as to see them.

The following motion was presented by Mr. Alan T. Clark of Howard County: Mr. Chairman, I should like to make a motion that you instruct the secretary of this meeting to express the deep regrets of those assembled here that Doctor R. A. Pearson, President of the University of Maryland, could not be here because he is confined to his bed by sickness, and, further, that we wish him to be blessed by a hasty and complete recovery. Seconded and unanimously carried.

The formality of electing officers was observed with the understanding that they should serve only until the pro-

posed consolidation should be effected or unless such consolidation should fail to materialize.

Adjournment.

REPORT OF MEETING OF COMMITTEE ON CONSOLIDATION OF LIVESTOCK ORGANIZATION

The committee appointed by President W. R. Harvey under instructions from the joint meeting held at the Union Stock Yards Hotel, Baltimore, January 9, met February 6 at 10:30 A. M. at the Rennert Hotel, Baltimore, all members in attendance excepting Mr. D. B. McDowell. Mr. G. B. Fenwick, of Glyndon, a member of the Maryland Sheep Growers' Association, was also present. Mr. W. R. Harvey, Corbett, Baltimore County, was chosen chairman of the meeting and B. E. Carmichael, College Park, secretary.

There was a general discussion of the proposal for consolidation, and the consensus of opinion was that consolidation offered some distant advantages and no important disadvantages, so long as the individuality of the different groups concerned may be maintained.

It was moved by Mr. J. W. Jones of Montgomery County, and seconded by Mr. G. B. Fenwick of Baltimore County, that the three groups, the Maryland Swine Growers' Association, the Maryland Sheep Growers' Association, and the Beef Cattle Growers, and other livestock interests of the State, be consolidated into one organization to be known as "The Maryland Stockmen's Association." Unanimously carried.

Officers as follows were duly nominated, seconded and elected, to serve until the first regular annual meeting.

President, W. R. Harvey, Corbett, Baltimore County.

Vice-President, H. D. Wolfe, Glenwood, Howard County.

Secretary-Treasurer, B. E. Carmichael, College Park, Prince George's County.

Assistant Secretary-Treasurer, K. A. Clark, College Park, Prince George's County.

Executive Committee, Officers as above enumerated and the following:

Mr. J. W. Jones, Olney, Montgomery County.

Mr. Edgar L. Thomas, Frederick, Frederick County.

Mr. D. B. McDowell, (P. O.) Nottingham, Pa., (Residence) Cecil County.

Mr. G. B. Fenwick, Glyndon, Baltimore County.

Director of Maryland Farm Bureau Federation, Mr. Edgar L. Thomas, Frederick, Frederick County.

Delegate to Maryland Farm Bureau Annual Meeting, Mr. G. B. Fenwick, Glyndon, Baltimore County.

It was moved by Mr. Wolfe and seconded by Mr. Fenwick that the two secretaries formulate a tentative Constitution and By-Laws to submit to the Executive Committee and take such steps as may be needed to complete the consolidation. Unanimously carried.

Mr. Clark presented the proposal of one or more Baltimore packers to furnish substantial financial support for the 1929 Maryland Litter Contest and possibly for other similar activities looking toward stimulating the livestock industry of the State, and it was agreed that such support be accepted.

Moved by Mr. Jones and seconded by Mr. Thomas that Mr. Clark be authorized to take such action as may be found necessary to arrange for the co-operation with one or more of the Baltimore packers in the Maryland Litter Contest as well as in such other similar activities as might be undertaken. Unanimously carried.

The meeting was adjourned, subject to call by the President.

REPORT

OF THE

Home and Community Meeting

Maryland Farm Bureau Federation

January 10, 1929

The sixth annual meeting of the Home and Community Committee of the Maryland Farm Bureau Federation was called to order January 10th, 1929, at 10.30 o'clock in the forenoon, in Room K—Rennert Hotel, Baltimore. Mrs. Harry T. Williams, chairman, presided, and after the invocation and song, minutes of the last annual meeting were read by Mrs. M. M. Stewart, secretary, and approved.

Chairman Williams then introduced Mrs. L. A. Sutton, Kent County, who told how a Master Farm Home Maker could be a 100% Farm Bureau member.

"What do you have to do to be a Master Farm Home Maker? It is just your every day life, and it starts from the time you have your own home. The first thing you think of when you begin to raise your own family is their HEALTH—that is, the right things to eat and the proper exercise. Some people think that their children just should not work, but I think work is very important. This should especially be impressed upon the minds of the children in order to let them know that they have a certain responsibility in the home. I know that without the help of my children, I could not find time to go to the Farm Bureau meetings.

I think another way to find time for these meetings is by budgeting our time. For instance, we could not get up this morning and say I am going into town to a meeting, after which we would return home and expect to find things in regular routine. No, it is necessary to do a little of the work previously, which ordinarily would be done on that day; and then when the time really arrives for the meeting,

it is just like finding a day and we can return home knowing that we have not lost a day, but have gained a meeting.

Often I am told by people that they do not have time to go to Farm Bureau meetings. In my opinion we need to meet together. In rearing a family, I think that if we do not mingle with others, and try to get the best things of life, our children will not think that they are worth while; but if we start with the children while they are young, they will have the inspiration and they will always love their homes and will think MORE of these meetings because we have all been helped by co-operation."

"THE FARM MOTHER" was then read by Mrs. Sutton, which she mentioned particularly as a guide to those who really wanted to be 100% Farm Bureau members.

Miss A. J. Pratt, of the Library Bureau, who has done much work with the Farm Bureau and Grange of New Jersey and elsewhere, was then introduced by Mrs. Williams.

Miss Pratt talked on *Opportunities for Library Improvement.* "Of course, you may be interested to know just what library opportunities are available to you as rural people. About twenty-five years ago a Library Board was appointed, on which board there were only two women. This library," said Miss Pratt, "has no connection with the Enoch Pratt or the State Library at Annapolis. Then there is also a Maryland State Library, which is also a professional association, but we are the Maryland Public Library Advisory Commission. Washington County was the first County to have a library of its kind. In Maryland we now have what is called the County Library in the following counties: Dorchester, Talbot, Frederick, Garret, Harford and Anne Arundel. Libraries are outlined as follows: A *Traveling Library* is a collection of about thirty-five books, which is loaned for a period of about four months, at the end of which time it may be returned and exchanged for another collection, or if you choose, renewed for another four month period. The character of the books depends, of course, upon the use for which they are intended. Then, we have what is known as a General Traveling Library which consists of books for

children and adults. Then there are the *School Library, Club Library, Grange, Package* and others.

Anyone living in Maryland who is without means of a public library may borrow books from the Commission at a very nominal figure. For instance, one dollar must accompany a request for a Traveling Library, which amount helps cover the transportation. There is no cost for a Package Library or for an individual loan except return postage."

Charts were shown as to how and where these libraries are expanding, and hope was expressed throughout the meeting that the Traveling Library would be used throughout the State in the very near future. Miss Pratt advised that the main objective of the Library Commission is "A County Library in Every County"—and she felt that with the aid of the Home and Community Committee of the Farm Bureau, the subject would receive more attention from the people in the counties. She promised that if at any time anyone needed aid or advice, she would be glad to come and do what she could to help.

Miss Gertrude B. Knipp, of the State Department of Health, was next introduced by the Chairman. Miss Knipp expressed regret that Mrs. Troy, State Advisory Nurse, was unable to be present, but had been called out of town on account of illness in her family.

Miss Knipp gave a very interesting talk on various subjects, covering the work of the Public Health Nurse, Child Hygiene, Summer and Winter Care of the Baby, Small Pox, Dyptheria, Scarlet Fever, Community Water and Sewerage Systems, Diets, and other subjects were dealt with. She tired to impress the necessity of the use of the Public Health Nurse in the Counties. These nurses arrange Child Hygiene meetings, contagious disease meetings, and other important meetings, giving very good and helpful information in each case. She also suggested that if anyone wanted information along health lines, that they call either upon the Public Health Nurse in the county, or write to Dr. R. H. Riley, whose headquarters are now at 2411 N. Charles St., Baltimore, who would be more than pleased to send any information he could.

It was reported that the Farm Bureau Market at Sparks, had not reopened this season, because people in the vicinity had found the advantages of same, and had gone into business for themselves.

Successful Farm Bureau meetings in which the women helped were reported by representatives from the various counties.

Mrs. Dixon was next before the meeting and talked upon subjects which had been discussed at the annual meeting in Chicago of the American Farm Bureau Federation. She spoke of over production of wheat and how same was gotten rid of; cheap freight rates, orderly marketing, taxes, indifferent farming, decreased acreage and increased production. Mrs. Dixon read several quotations from speeches which had been made at the Chicago convention, among which was the following from the address by Mr. Virgil Jordan, Chief Economist, National Conference Board of New York:

"TAXES: Indications since 1922 are that the prices of farm products showed some recovery for three years, but then fell again, until during the past year they have been a little above the 1922 level. During this period, however, the prices paid by farmers for goods used in production and for family maintenance, as well as the level of farm wages, has tended to rise, or at least to remain in some cases fairly constant, while the level of farm taxes has risen steadily and rapidly throughout the whole period. During the past year the prices paid for goods used in production has been about 46% higher than the pre-war average, those paid for family maintenance 62% higher, farm wages 68% and farm taxes 158% higher, while prices received for farm products have averaged only 40% higher. This means that while the farmer has had to pay about 70% more than before the war for the things he has had to buy to carry on his business and support his family, he has been able to get only 40% more for the things he sells; and that this situation is just as true today as it had been since the drastic depression from 1920 to 1922. In other words, the real value of the labor the farmer has put into producing farm products is

about 20% less than in the five years before the war, while the real value or purchasing power of the city worker's labor is more than 30% higher."

Mrs. Gaver, of Frederick County, reported that their Farm Bureau had held twelve meetings throughout the year, and all were well attended; that they had picnics and that programs were arranged according to various occasions, such as Mother's Day, Father's Day, etc. She also told of the publicity they received in their county—that whenever a meeting was to be held, there would be a write-up before, and that would be followed with accounts of the meeting after.

The Home and Community chairmen who were present from the various counties gave a report of the work which had been done in their locals and counties. This included participation in Better Homes movements, Community Christmas celebrations, assistance given to libraries, library branches opened and managed, health work, assistance to school cafaterias and community work. Some of the Farm Bureau exchanges are still doing well. Local meetings had been greatly helped by the women—both as to program and social side. County and local picnics were largely aided by the women of the Farm Bureau, as was also the case with the annual meetings and banquets.

An interesting discussion followed in which the Farm Bureau women of the different counties took part, and from which many helpful ideas were gleaned by all who attended.

Mrs. Harry T. Williams was reelected chairman of the Home and Community Committee and again appointed Mrs. M. M. Stewart to act as secretary. In a short acceptance speech, Mrs. Williams urged the farm women to attend the local meetings and work shoulder to shoulder with their husbands and fathers.

Women should not only be interested in the farm home, but also in everything connected with the business of the farm.

REPORT

OF THE

SEVENTH

Beef Cattle Conference

WEDNESDAY MORNING

January 10, 1929

The Seventh Annual Conference of Beef Cattle Producers was held at Baltimore on Thursday, January 10, 1929, with Mr. J. W. Jones of Montgomery County in the chair. In his Chairman's address Mr. Jones dealt briefly and to the point with recent conditions and present tendencies in the beef cattle business in Maryland.

The Chairman next called upon Mr. W. C. Davis, Senior Marketing Specialist of the Bureau of Agricultural Economics, U. S. Department of Agriculture, who delivered the following valuable address. Mr. Davis' address was received by his hearers as an authoritative, clear-cut presentation of facts which are of much importance to breeders and feeders of beef cattle, in Maryland and elsewhere.

BALTIMORE AND WASHINGTON BEEF TRADE

By W. C. Davis

In every merchandising enterprise one ever present problem is that of marketing its products advantageously. To this end a thorough knowledge of markets and market requirements is of paramount importance. Production of an article without a market in which to sell the product must inevitably result in failure.

The ultimatum therefore from the consuming public is —produce that which I want or take the consequences.

Not many years ago, and well within the memory of most

of us, the automobile came into vogue. It came over night as it were, and was accepted by the public generally because it appealed to the desire of human nature. It provided a quicker means of transportation and added generally to the pleasure of the human race. On the other hand it displaced the many types of horse drawn vehicles and for a time at least caused consternation in the ranks of all those whose business it was to manufacture them. These men saw their vehicle business disappear, virtually as fog before the noon-day sun. There was no longer a demand for their product, consequently no incentive to continue production. To some it spelled financial disaster, to others it meant rather drastic adjustments in their manufacturing processes to meet the changed conditions.

The style and mode of transportation, very largely had changed—hence, to meet this newer demand the production of a different product was essential.

And now, after a lapse of only two decades, insofar as automobiles are concerned, one has only to stand for a moment at a street crossing in any of our large cities to appreciate how effective the change has been. Automobiles are everywhere, and they are everywhere because you and I—the customer consumers—demand them. In the light of such a demonstration it is not difficult to answer the question—What makes a market?

The illustration is an extreme example of what can happen in the case of any commodity and should tend to remind us very forcefully that if we would prosper we should put ourselves and our business in harmony with the trend of the times.

Despite all that has been said to the contrary, the old law of supply and demand is still on the job. Produce according to the demands of your market and returns under normal conditions will be commensurate.

The subject assigned me has to do with markets for your beef cattle, and quite naturally you want to know all there is to be known about those markets. Any presentation of the beef trade in Baltimore and Washington as it exists today would be incomplete without some reference to the past. If you will go with me in thought back to the time

when these cities depended very largely upon the nearby States, particularly Maryland, Virginia, and West Virginia, for their beef supply, and try to recall the type of animal sent to market in those days as contrasted to the type which supplies the bulk of the beef today, it will at least be enlightening. In the old days feeders were bought largely in the mountains of southwest Virginia and eastern Tennessee. More often than otherwise they were collected in lots of one to a half dozen, and represented a nondescript assortment without any definite indication of breed. To a very great extent the dairy type predominated. For the first year or two these animals had been required to rustle for themselves, without much, if any, attention from their owner, consequently they early became stunted. A winter on roughage, and possibly a little grain, then with the coming of spring and a finish on grass they were supposed to be in prime condition for market. More often than otherwise returns from the commission firm showed prices two to three cents per pound lower than was expected, and we began to wonder what it was all about.

To begin with we started wrong. I say "we" because I was one of the unfortunates, and yet year after year we would do the same thing over with like results. In those days little or no consideration was given to breed—dairy type was thought to be as good as beef type, and a general mixture of crossbreeds was not rare. Even after all these years there are some who still cling to the old ideas. The trouble was, the requirements of the market had not been studied. Consumer whims are capricious, therefore need constant attention. What satisfies one season may not be the vogue next season.

Fortunately for the cattleman "styles in beef" change more slowly. Over a long period of time both Baltimore and Washington have been known as cheap markets for beef. Whether this has been due to consumer ignorance of quality or some other cause, the fact remains that a very large percentage of the quality consisted of the lower grades.

During the past five years a marked change in this respect has taken place in Washington and to a lesser extent in Baltimore. Instead of being satisfied with poor quality

beef the average Washingtonian is now demanding a very large portion of the better grades. Instead of buying medium and common beef as formerly they are now demanding good and choice beef. Furthermore there are evidences on all sides that they are willing to pay for quality when they have satisfactory assurance of quality.

Because of these changed conditions, Washington is receiving each week an increasing proportion of Government graded and stamped beef. The average total weekly requirements are approximately twelve hundred carcasses or an equivalent of 720,000 pounds. This quantity is handled through ten wholesale houses and by them distributed to retail dealers, hotels and restaurants. Washington is not a meat packing or meat slaughtering center. Virtually all local slaughtering is done in one abattoir located within the district but approximately two miles from the city proper. The great bulk of all meats is shipped in from western packing centers. From the standpoint of retail distribution there is a decided trend away from centralized marketing areas. The average housewife no longer "goes to market" as was the general custom two decades ago. Instead, she goes to the neighborhood store or to a store just around the corner on one of the business streets. Instead of waiting for customers to come long distances the retailer has virtually gone to the customers' domicile. This process has been going on for the past ten years but did not become so pronounced until within the past two years. As a consequence business in what was formerly centralized areas or central markets has dwindled fifty per cent and in some cases almost to the vanishing point.

It is a process of evolution, brought about very largely by changes in our economic life. With it have come generally better and more sanitary stores and increased efficiency in their operation. Should the trend continue, and all indications point that way, it will be a matter of only a few years before large retail marketing areas will have become past history. The question probably uppermost in your minds now is—who or what has been responsible for this shift from centralized marketing areas to residential and semi-residential communities. There are probably two

major factors responsible. One is a lack of desire on the part of housewives to go long distances for table supplies with all the accompanying inconveniences, and the other is the foresight of large retail distributors who apparently sensed the housewife's attitude and for her convenience located a store virtually next door.

In addition to these factors, there has come into being a marked change in methods of operating. Cut throat price competition, without regard to quality, which formerly was practiced by many, has largely been abandoned, and, instead, quality of product is now receiving attention. As a consequence consumers are beginning to learn concerning quality in meat. To this end the Government grade stamp on beef serves their purpose admirably. In the city of Baltimore "the market basket" which at one time was considered an essential of every home has now become conspicuous by its absence on the streets of the city. Virtually the same processes of evolution are at work in Baltimore as in Washington. The trend is from large central market areas toward the residential areas and suburban districts. The food distributors are making the problems of food buying less burdensome and in a sense are becoming our next door neighbors.

This condition is not local in character. It applies to practically all our larger cities. These cities are your logical markets. The demand for beef is there. Are you supplying that demand or are you producing just so much beef? The frailties of human nature are man's worst enemies. It is therefore easy to get in a rut.

Baltimore City and its environs require each week approximately 2,100 cattle or the equivalent of 1,250,000 pounds of beef to satisfy its consumptive demand. This quantity added to the requirements of Washington City makes a total of 3,300 cattle and a beef equivalent of approximately 2,000,000 pounds. Your concern probably is—How can these things be made to benefit my business? Your business, I take it, is producing beef of a quality or grade that meets your market's requirements.

In an effort to bring this phase of the picture very force-

fully to your attention, should I become critical, I trust you will understand that it is because of a desire to be genuinely helpful. I have no other motive.

At the outset I had something to say about the type of feeder cattle generally purchased all through this section. I tried briefly to show how impossible it was to produce beef of high quality from such animals. I have had occasion during recent months to examine numerous lots of beef carcasses from cattle grazed on Maryland and Virginia farms. As a consequence I am convinced that in many cases the same old methods are being followed. By far the larger percentage of these not only lacked breeding but generally lacked the degree of finish that is now in greatest demand. This section of the country has been abundantly blessed by nature with luxuriant grasses and other grazing facilities on which your cattle thrive. Grass makes beef and increases weight, but grass alone does not make the best beef.

According to the official grades, the great bulk of grass-fat cattle, when sold and slaughtered as such, generally grade between the low end of good and down to common. The kind of finish that is in most demand is that produced by feeding grain or concentrates. After all, your interest lies in the kind or quality of product that brings you the greatest returns. To this end let me suggest for your consideration the possibilities connected with a program of finishing cattle on a grain ration. First of all, attention should be given to the type and quality of feeders. Every successful enterprise is based on a sure foundation, and in this respect production of beef on a commercial basis is no different from any other enterprise. It requires the right kind of foundation stock, and non-descript offspring of dairy breeds will not suffice.

What your markets demand today and are willing to pay for are carcasses of good to choice quality from steers and heifers weighing approximately 900 to 1100 pounds on the hoof. Animals between these weight ranges produce carcasses weighing from 450 to 600 pounds, and the tendency of demand is toward even lighter weights. Hardboned,

heavy carcasses, from three to six and seven-year-old cattle, are no longer in demand. Cattle of the rough, rangy type which formerly were peculiar to the Western and Southwestern ranges have almost disappeared, and in their place has came a type of beef animal that is in keeping with the changes in demand. This type is represented chiefly by such breeds as Angus, Herefords and Shorthorns. Inasmuch as the bulk of beef sold in Baltimore and Washington comes from sections of the country outside your domain, it follows necessarily that your product must be sold in competition with it. If you produce the quality that is in greatest demand you have an advantage. If you produce the quality that is in least demand you are at a disadvantage.

Briefly, your logical markets demand beef of a higher average quality than that now produced generally on Maryland and Virginia farms. The question then seems to be —how can the present situation be changed to your advantage? The answer is—better feeders, more attention to beef breeds, and a finishing period on grain or concentrates.

Mr. William H. Pew, of Briarcliff Farms, Pine Plains, New York, was next introduced. He delivered an excellent address during which he presented much interesting and valuable information concerning the production and sale of high-class "baby beef" in the State of New York. Mr. Pew's address held the attention of the audience in a fine way, and many questions were asked by those who were present. It was apparent that the market cattle produced at Briarcliff Farms met present-day requirements as outlined by Mr. Davis. A number of slides were shown depicting various phases of the work at Briarcliff Farms, and showing some of the excellent breeding animals which are maintained at that extensive beef-producing establishment. It was an address which should have been heard by every feeder of beef cattle in the State of Maryland. It is regretted that it is not possible to publish Mr. Pew's excellent speech in full. It is probable that a number of Maryland feeders will visit Briarcliff Farms to study at first hand the important work that is being done there.

Mr. K. A. Clark, who in 1927 was successful in making a start with Beef Calf Club work in Maryland, was called upon for a discussion of the developments along this line in the State. His interesting presentation of the important facts concerning this new work follows:

BEEF CLUBS IN MARYLAND

By K. A. Clark

Mr. Chairman and Gentlemen:

It is with great pleasure that I take this opportunity to discuss with you our Baby Beef Club work. This work, started in Washington County in 1927, is destined to have a marked influence upon the habits and practices of cattle feeders in Maryland. The members of this club have already demonstrated the rapid gains that can be put on calves. They have sought and found a satisfactory market for their calves of high finish, choice quality and proper weight. Beef of this kind caters to the consumer. Heavy, plain, half-fat beef goes counter to the demand. It was to make practical application of some of these principles, as well as to provide sizable instructional projects for a few of our farm boys, that this work was started two years ago.

The Washington County Beef Club was organized in February, 1927. Its inception was rather unique. We had frequently spoken of such a club, but it just never materialized. During our Extension Service conference, I learned of a sale of Angus cattle near Smithsburg at Mr. A. L. Towson's place. Mr. Towson was offering six or seven steer calves among others. I had seen them but a short time before and knew they were suitable. I talked the matter over with County Agent M. D. Moore of Hagerstown. We finally reached the agreement that he would round up the boys if I would take care of getting the calves. Being unable to attend the sale, I called Mr. E. D. Stotelmyer of Boonsboro. He is a cattle feeder of long experience and good judgment. He was really sick and under physician's orders to stay in, but said he wanted to do anything he

could to help in a proposition of this kind. It was an ugly day, but he went to the sale and succeeded in getting five of the calves at an average of $52 per head. We had no sooner placed these calves with boys than orders came to us requesting steers. This kept up until we had finally placed five Herefords and five Shorthorns to go with our Angus. Incidentally it took almost three weeks of time and several hundred miles of travel to locate these ten additional calves. This shows how scarce beef breeding herds are in this section.

Practically every calf went onto a farm where steers are fed regularly. The boys knew how to feed, and the competition was keen. These calves made rapid gains, finished nicely, and made a wonderful show when they came into the fair in October. They were sold on Thursday, October 13, for an average price of $20.58 per cwt. The Angus steers averaged 880 pounds in weight and sold for an average price of $19.50 per cwt. The Hereford steers averaged 850 pounds in weight and sold for an average of $22.23 per cwt. The Shorthorn steers averaged 949 pounds per head and sold for $20.01 per cwt.

The champion steer was an Angus weighing 1010 pounds fitted and shown by Page Smith of Clearspring. The calf was bred by Mr. A. L. Towson. He was an excellent bullock —smooth, deep, thickly and evenly fleshed, and strong in loin and quarter. He was purchased by Messrs. Wm. H. Slick and Sons, Hagerstown butchers for $32.00 per cwt.

The first prize Shorthorn steer was fed and shown by Roger Weagly of Funkstown. This steer weighed 985 pounds and was purchased by Mr. Jacob Johnson, Jr., Hagerstown butcher, for $25.00 per cwt. The first prize Hereford steer was fed and shown by Fred Wintermoyer of Hagerstown. This steer weighed 940 pounds and sold for $30.50 per cwt. to Mr. Jacob Johnson, Jr. The total returns of the first sale amounted to $2803.31 for the 15 steers.

The success of this first club was directly reflected in increased interest and in the size of the 1928 club. In 1928, both Frederick and Washington Counties had clubs

with a total of 49 steers in the hands of 40 members. Most of these steers were purchased in Kansas City at the sale of feeder calves held in connection with the American Royal Livestock Show. The Washington County steers were shown and sold at the Hagerstown Fair. The Frederick County steers were shown and sold at the Frederick Fair.

The champion steer of the Washington County Club was an Angus weighing 1075 pounds shown by James Spielman, Hagerstown. This steer was purchased by Mr. William H. Slick for $22.25 per cwt. The first prize Hereford steer was shown by Audrey Knepper of Funkstown. This steer weighing 955 pounds and sold to Mr. Slick for $20.75 per cwt. The first prize Shorthorn steer was shown by Helen Smith of Clearspring. He weighed 1025 pounds and brought $20.75 per cwt., selling to the Schluderberg-Kurdle Company of Baltimore. This firm was the heaviest purchaser at the Hagerstown sale, taking 23 head.

At Frederick the following week a small but successful show and sale was held. The champion steer was a Hereford shown by Sterling Eyeler of Emmitsburg. This steer weighed 1010 pounds and brought $32.00 per cwt. from the Corkran-Hill Company of Baltimore, Maryland. The first prize Angus was a steer shown by Clifford Shriver of Emmitsburg. This steer weighed 1060 pounds and brought $27.00 per cwt., also going to the Corkran-Hill Company.

The following table carries the general statistics for the entire 1928 sale:

STATISTICS

MARYLAND BEEF CLUB—1928

	No. of Steers	Av. Wt. Lbs.	Av. Price Per Cwt.	Av. Price Per Head	Total Wt. Lbs.	Total Returns
Washington Co. Angus	15	1028	$16.68	$172.43	15,415	$2586.42
Washington Co. Herefords	15	969	16.67	161.53	14,535	2422.92
Washington Co. Shorthorns	10	916	15.64	143.95	9,155	1439.47
Washington Co. All steers	40	978	16.41	161.22	39,105	6448.81
Frederick Co. Herefords	3	950	21.50	207.90	2,850	623.70
Frederick Co. Angus	5	979	22.45	221.89	4,895	1109.46
Frederick Co. All steers	8	968	22.09	216.64	7,745	1733.16
State Average Angus	20	1016	18.12	184.79	20,310	3695.88
State Average Herefords	18	966	17.47	169.26	17,385	3046.62
State Average Shorthorns	10	916	15.64	143.95	9,155	1439.47
State Average All steers	48	976	17.36	170.46	46,850	8181.97

The greatest single problem of this work has been the purchase of the calves. Suitable calves have simply been unavailable. The first year our calves varied in weight from 280 pounds to 560 pounds. They varied in price from $42 to $68 per head. Last year our Western calves were more uniform, but even then they varied in weight from 270 pounds to about 575 pounds and in price from $40 to $75. These irregularities are extremely difficult to handle. They create dissatisfaction among the members. The steers usually vary more at the end of the feeding period than they do at the beginning. This makes it even more necessary to get uniform calves to start with. A great deal of this difficulty could be avoided by purchasing two or three loads of calves from which to select our club material, selling all the steers that did not meet requirements to feeders or grazers. The difficulty of weighing steers individually must be met and solved. Boys should pay for the pounds they buy—no more, no less. Because we have had to buy calves in small bunches and cannot fill our entire order at one time, there has been much delay in getting calves located and started on feed. Both years several weeks have lapsed between the time the first and last calves were delivered. Contrary to this, all calves ought to be started out on feed at the same time.

In spite of all these disagreeable angles, it has been easy to create interest and enthusiasm among the club members. This is directly attributable to the strong character, unselfishness and understanding of the club members. We try to place steers only with those boys who live on farms where steers are fed as a regular part of the farm program. We prefer boys from 15 to 20 years old. Most of our boys have been big, husky, hard-working chaps who know what it is all about. They study their calves and simply make them put on. In no section will one find the art of fattening steers developed to a finer point than in Maryland. These boys have inherited a patience and a skill that can scarcely be taught them. With this favorable background it would be hard to make beef club work do anything but succeed.

In managing this club we try to inspect each calf once every six or eight weeks all summer long. We feel this close supervision is very desirable. Questions are constantly arising in connection with the feeding of any one steer. Many of these problems can be solved only by literally going into the stable with the boy and his calf. Regular meetings are not held. Three or four meetings each year should be enough to allow a thorough discussion of most of the questions and policies of a general nature. A tour of all the members is arranged late in the summer. The tour is mighty beneficial to the boys, especially the new members.

The boys are advised to use home-grown feeds entirely, buying only cottonseed meal or linseed oilmeal to balance their corn, hay, and silage. Extreme results may not be attained by following this policy, but our aim is to teach lessons of a practical nature—something they can follow when they start to feed steers for themselves, something their fathers can adopt as sound.

The calves are weighed before they are sold, and the weights are announced at the sale. In this way, the buyer knows exactly what he is buying. The calves are kept off feed and water 14 hours before weighing. This effort to give fair weight has yielded the boys much good will. I am sure the buyers appreciate this effort to give honest weights.

Our plans for the coming year depend largely on whether we can get suitable calves. At least five or six counties will have club steers if we are able to get them.

This work is exceedingly pleasant. I treasure the friendships found in this project. I am convinced these boys are blazing the way to a more satisfactory beef production program in Maryland.

Mr. H. R. Shoemaker, County Agent, Frederick County, Maryland, gave a brief, meaty summary of the Frederick County work as fellows:

BEEF CLUB WORK IN FREDERICK COUNTY, 1929

By H. R. SHOEMAKER, County Agent

Although Frederick is not a leading County in beef production, there is a small section around Emmitsburg where many beef cattle are fed annually. It was in this community that our beef club work was conducted in 1928. There were only ten members in the Emmitsburg club, five had Hereford calves and five Angus. All of the calves, with one exception, did splendidly. The calves were distributed in December and in every case except one, members lived on farms where beef cattle are regularly fed. It was not our idea to change any system of farming, but merely to improve practices on the farms where cattle are fed. No attempt was made to place beef calves on dairy farms. For this reason the club was restricted to the Emmitsburg community.

The calves weighed about 400 pounds when they were received and cost approximately $70. The price was high but all of the boys made money. The calves were gradually put on full feed and averaged nearly 1000 pounds when they were sold at public auction at the Fair in October. They sold for an average of 22 cents per pound.

The work of club members created a great deal of interest in the community. It demonstrated to feeders the possibilities in the production of light-weight cattle. As a result of the demonstration several farmers are expecting to buy baby beeves to feed next year.

Mr. M. D. Moore, County Agent, Washington County, gave a short address in which he told, from the viewpoint of the County Agent, something of the importance of Beef Calf Club work as an Extension project that is at once interesting to the boys and girls who participate in it and

valuable to the men who are engaged in beef production in the County.

Mr. DeWitt C. Wing, of the Rural New Yorker, commented briefly upon some of the facts which had been presented by the different speakers during the conference and stated that a source of good cows at a reasonable price is important. He suggested the possibility of using small Florida, or other Southern, cows of rugged constitution to mate with good young bulls of high vigor and prepotency.

Before declaring the meeting adjourned Mr. Jones, Chairman of the Conference, stated that in his opinion this was the best Beef Cattle Conference thus far held in Maryland.

Adjournment.

REPORT

OF

Boys' and Girls' 4-H Club Conference

Wednesday, January 9, 1929

Baltimore, Md.

Miss Dorothy Emerson as chairman of the group called the meeting to order at 10.15. She stated the purpose of the meeting, and in a few remarks called the group's attention to the absence of 4-H Club Champions in various phases of Club work in the States. Outstanding work in Maryland is rewarded by trips. Every boy or girl has the opportunity to compete for these and they are awarded on a basis of their general ability and accomplishments as 4-H Club members.

Miss Evelyn Zepp, of Howard County, gave an account of her trip to Springfield, Mass., where she attended Camp Vail.

A Club Girl's Trip to Camp Vail

I have been in 4-H Club work for the past six years. My home is at Clarksville, Md. I had only visited two other States of the Union, other than my own, until this fall, when I was so surprised and happy to learn that I had been selected as one of the six girls who were to represent Maryland at Camp Vail, which is held at Springfield, Mass., on the grounds of the Eastern States' Exposition.

We went by train, through seven States on our way up to Massachusetts. These seven States were Maryland, Delaware, Pennsylvania, New York, Rhode Island, Connecticut and Massachusetts. There was quite a variety of scenery which is hard to equal anywhere.

There is a bridge we crossed over the Hell Gate River, known as the Hell Gate Bridge. This is 3½ miles long, 175 ft. high and was cut from solid rock in 1868. If you

have never crossed over on this, you cannot imagine how beautiful the scenery is. I also saw the largest drawbridge I had ever seen before, being raised, in Bridgeport, Connecticut.

The girls and boys of Pennsylvania and Delaware who were also going to Camp Vail had boarded our car. This is the first year that Pennsylvania has sent any Camp Vailers to Springfield. Soon became acquainted with our fellow Camp Vailers and felt as though I knew them when we reached Springfield at 7 P. M.

We were taken in taxis to Camp Vail. The girls from Maryland found that our Training school representative had fixed our bunks for us, so as we were rather sleepy, we soon retired for the night.

There was breakfast at eight o'clock, but before that the Maryland boys had killed and picked twenty chickens. You know chickens were sent up ahead of us, from Maryland, and we had a booth where we fried chicken, for the Massachusetts people do not fry their chickens as we Marylanders do, so there is quite a demand for Maryland fried chicken.

West Virginia State Camp Vailers also had a booth in the same building as ours, so another Maryland girl and I took charge of their booth for awhile in the afternoon. In their booth they made rugs and towels.

Went into the Coliseum in which the people were thronged, and from which we could hear beautiful music. After trying for five minutes to get in as far as the Arena, we found that a band of 152 pieces was playing. This is the largest organization of its kind in the United States. I have never heard such pretty instrumental music as this was.

It was impossible to keep near the music so we soon were viewing the many exhibits, which were under the grand stand in the Coliseum. The best exhibits here were the exhibits of vegetables, flowers and one showing a canning budget for a family of five. I have always loved to can, so was very much interested in this one. The budget provided the proper amount and variety of various fruits and vegetables, worked out so as to provide for the well-being and satisfaction of a family. This made up one of the prettiest

canning exhibits there. Another attractive exhibit was of apples. This was pretty.

We next went through the Maine State building. This was built in 1925, and it was said that most of the materials used in construction were produced in Maine. One of its inside features during the week was the cooking of old-fashioned pies. These pies were made from apples grown in Maine. There was also a large display of potatoes and another of apples which was very interesting. Their fish and game department surely drew the people. Here were foxes, raccoons, deer, beavers, a bobcat, muskrat, mink, etc. There was also just a department for the fur-bearing animals of Maine.

I also saw other exhibits in basketry, flowers, canning and Girls' and Boys' Scout work.

That evening after supper we heard Kenneth Henshaw speak in our evening assembly. He was the winner of the Moses Trophy in 1927. The basis of his speech was that the 4 H's could stand for Hope, Honesty, Helpfulness and Habit instead of Head, Hand, Heart, and Health. Mr. Henshaw closed his very interesting speech by saying how fine it would be if we could all develop the ability to win well, lose well, and receive victory.

The next morning we had breakfast at seven. We all ate in one large tent. There were about 600 girls and about 600 boys who were Camp Vailers. After breakfast we went through the Industrial Arts Building. This building has a floor area of 3 acres; was built in 1924, and contains three-hundred fifty-three units of exhibition space, approximately 12 x 15 feet each. There were said to have been two hundred fifty exhibitors from twenty States and several foreign countries, this year, in that building. It is known as the largest and finest exhibition hall in America. Here could be found exhibits of vegetables, fruits, candy, ice cream, automobiles, stoves, and several companies had exhibits as Atlas Jar Co; Fairfield Western Maryland Dairy; Westinghouse and Coal Companies. A few of the States had large exhibits. Vermont had a large one of Maple Sugar, New Hampshire had a fish and game exhibition, and Connecticut had a very attrac-

tive exhibit, which was the front of a house and lawn. Vegetables were arranged on lawn in different shapes and designs to represent flower beds. This was very clever and pretty.

The State of Massachusetts had a very interesting building here, which was a copy of the old State House at Boston. In here were exhibits of the State's resources. As I walked in here with my notebook in my hand, a man tapped me on the shoulder and said, "If you're going to take notes, don't miss the forestry, and the Conservation of the Forest exhibit for I've been in there all morning and I am still interested and I hate to leave." So I saw this exhibit and believe I enjoyed it almost as much as that man did. It was so very interesting and educational and well worth a visit. The egg grade department was also interesting. In here eggs had been graded, and I learned what qualities a real good egg has. In the Massachusetts Building was also a model New England Farm Home. This was in the center of the building. It showed what a farm can be with modern equipment arranged so as to save all possible steps for the housewife. There was a home flower and vegetable garden and a model roadside stand, such as can be run by many a farmer. The barn was equipped with modern apparatus for lightening the work and reducing the labor costs and in here were four good looking cows, from the Massachusetts Agricultural College. At each exhibit there was a little motion picture show going on, illustrating the work of that division. I stopped to watch one which showed the steps from start to finish in the manufacturing of blankets from the wool of Massachusetts sheep and the sale of the blankets by the farmers who turned their wool in the blanket pool. Samples of the wool in its various stages and the finished blankets were shown.

I helped to fry chicken in the afternoon and was in the Camp Vail parade in the evening, which consisted of boys, girls, and their leaders from twenty-two States of the Union and four provinces of Canada. After their parade we all saw the movie of "Modern Cinderella" through the courtesy of the Singer Sewing Machine Company.

The next morning we all attended our Camp Vail assembly

where we all got together and had a grand time. We visited the Junior Achievement building. In here we found basketry, rug weaving, all kinds of leather products, styles in dresses, girls' sewing from 12-18, and other interesting things

I judged canning with many other of the Camp Vail Girls. There were three kinds of ribbons given and those who received an average high enough to receive a blue ribbon were awarded one, the same with red, and white ones. There were some who didn't get any of the ribbons. I received a third prize ribbon.

The Colgate Company had a building on the grounds which we visited. Here stains were removed from clothing with Fab. We learned how to remove ink, grease, rust, mildew and paint spots. Next this building was a dye bungalow. A lady gave a demonstration. She told how to best dye a dress so it will be fast, how to remove all dye from a garment and gave quite a few examples of dresses which had been remodeled and told how to remodel old styles into new styles. This was very interesting.

In the evening we went to the "Bleechers" and saw a vaudevile and Sepalas Dogs. This was nice. Then came the Whippet races. (They say that racing Whippets are quite a novelty in Massachusetts. They surely must be for one lady on the grandstand wanted to know if the Whippets were going to run with the boxes on them.) Also saw the first Auto Polo game, and "A Night in Bagdad," which was all fireworks, and such a grand display of fireworks we hadn't ever dreamed of. What impressed me most was the American Flag. I also liked Dewey at Manila and Niagara Falls, and the other fireworks were beautiful.

The next evening we all went to a Horse Show which was held in the coliseum. This was very interesting to all.

Next day I went through the poultry building, I had never seen so much poultry before. There were more than six hundred exhibits in here. From the poultry house I went to see all the horses. These were beautiful. I hardly knew there were so many pretty horses in the world. In this building were old-fashioned buggies, wagons and pony carts.

From here we went to see the cattle. Surely did like them. I wish everybody from Maryland could have seen the fine exhibit in which were such large animals and so many.

Another Camp Vail girl from Maryland and I gave a bread demonstration. Then we all paraded on the race track, after which we saw a movie called "Modern Speed." This was very educational.

The next afternoon most of the Maryland Camp Vailers went into Springfield to see the town. But as this was our last day and I had seen some of the city on Sunday I decided to visit some of the other buildings on the Fair grounds. I visited the Hampden County Improvement League building. The apple exhibit in here attracted my attention. This contained the seven apples best adapted for New England culture or those considered most profitable to grow in New England. This display consisted of the seven varieties, which are: Delicious, McIntosh, Gavenstein, Northern Spy, Baldwin, Wealth and Greening. By grafting it has been possible to grow all varieties on one tree.

The exhibit of canning done by the 4-H girls of the county was interesting. These girls had canned more than 30,000 jars of all kinds of vegetables and fruits during the summer.

Here was also a moving display in the egg department, showing the advantages of stock in a healthy condition to start with, good care and feeding and proper marketing method afterward, also an exhibit and demonstration of candling eggs. Just beyond this were the fruit and vegetable exhibits. Then a very interesting miniature model farm, which contained a vegetable garden, pasturage, barns, house, and even a timber lot reproduced in miniature and freshly dug potatoes in the garden. This was all very pretty.

Then I visited the Ailbert Homestead, which was built in 1794, and is completely furnished in early American Antiques. There was a spinning wheel in the kitchen, all the walls and ceilings of rooms were just wood, not even painted, and all the steps were very narrow and steep. Was very attractive.

Near here was an old-fashioned store, known as the At-

kinson Store. This was built in 1799. Here were antiques, and articles made by the blind which were on sale. This represented an old-fashioned store as was kept so long ago.

Went to the dog show on the grounds. In the one building there were more than 300 dogs of 35 different breeds.

Then we saw the sheep exhibit. The sheep were very large and surely were pretty.

On our last night at camp there was I think, one of the most inspiring services I have ever attended. This was a "Get-together combination Camp Fire and Candle Light Service." Every girl and boy from Maryland received a prize ribbon for judging.

After the service we bade all the leaders goodbye.

We left Springfield at 10 o'clock Saturday morning. We all enjoyed our trip home. Our fellow-Camp Vailers from Virginia, Delaware and Pennsylvania came home on the same train as we, so we were all together.

We arrived in Baltimore at about 7:30 and had our supper in the station.

Here's to Old Camp Vail
The finest camp in all the land
Here's to boys and girls
A happy-hearted 4-H Band
Rah! Rah! Rah!
Where e'er we go
We'll never, never fail
To strive to live what we have learned
From other States at Old Camp Vail.

Miss Emerson then led a discussion on the value of travel for young people, stressing the broadening of views and benefits derived from contacts with people from other States.

Discussion of qualities for selection for honors and trips. The following points were brought out:

1. Good project work.

2. Character and ability to carry experience back to the home community and inspire other club members.

3. Project work, that not only is good work but work that influences others in the community or county to improve their work.

4. The aim of club work is to develop the vision and inspiration among its members.

QUESTION: Is a boy or girl who feels that he is not getting anything out of club work a hindrance to club work?

ANSWER: By Edwin Preston, and Mrs. Linthicum: They should be given a fair trial and if they show no improvement they should be dropped, as they hinder others.

QUESTION: What type of teaching is best for club work?

ANSWER: The leader who uses old type school teaching methods is doomed.

Self leadership is the basis for club work.

Club work should be fashioned to fit the needs of the community.

A home visit by the County Agent helps improve the work of a member.

A leader should be on the plane of club members in interest and thought.

"Do not use 1910 education or you will get 1910 results in 1929."

Talk by Mrs. M. M. Stewart of Gambrills, Maryland:

Mrs. Stewart expressed the regret that Mr. Stewart was not able to be present because of illness.

"The future of agriculture depends upon the boys and girls now in 4 H. Club work."

"They should learn co-operation."

"The 4 H Club page in the "Bureau Farmer" is for the use of the 4 H Clubs in the State. Always remember to send in news keeping in mind that although the activities of your home club may not seem outstanding to you but may be a help to others."

"The aim of this conference should be a greater attendance of Club boys and girls and their parents."

Discussion of publicity in connection with 4 H Club work. The general feeling was that especially prepared articles given the papers for publication were the most accurate and effective.

Mr. McKnight outlined the County Council of 4 H Clubs in Dorchester County and the 5 County Eastern Shore Council. The discussion brought out many benefits to be derived from the linking together of clubs.

Edwin Preston told of the Harford County 4 H Club Federation, which has been working for several years.

Mr. Anderson told of plans for extending club work in Montgomery County.

Mr. Jenkins, State Boys' Club Agent, gave a talk on club work as an educational agency in which he brought out the importance of leaders knowing the principles of education; the importance of developing openmindedness; the demonstration method of teaching "Learning by doing"; right attitude; keeping up with new ideas and developing "group mindedness" in clubs. He summarized his talk by stating that "Character, not scholarship, is the chief aim of all Education."

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